PRELIMINARY UPLAND ASSESSMENT REPORT
MCCONKEY/SESKO SITE
1725 PENNSYLVANIA AVENUE
BREMERTON, WASHINGTON

OCTOBER 26, 2007

FOR
CITY OF BREMERTON

GEOENGINEERS

PRELIMINARY UPLAND ASSESSMENT REPORT
MCCONKEY/SESKO BROWNFIELD SITE
BREMERTON, WASHINGTON

File No. 00892-017-00

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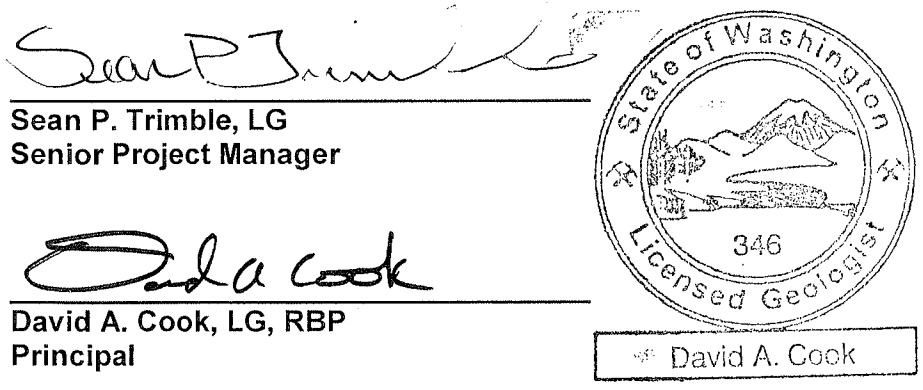

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1.0 INTRODUCTION

This report summarizes the results of the Preliminary Upland Assessment conducted at the McConkey/Sesko Site (herein referred to as the "Site") located at 1725 Pennsylvania Avenue in Bremerton, Kitsap County, Washington. The location of the Site relative to surrounding physical features is shown on Figure 1. The general layout of the Site is shown on Figure 2. Additional Site information, including ownership and history, is presented in Section 3.0 of this report.

The Washington Department of Ecology ("Ecology") has given the Site a priority ranking of "1" using the Washington Ranking Method (WARM), indicating the greatest assessed risk of potential impacts to public health and the environment. We understand the City of Bremerton and one or more of the current Site owners are considering cleanup and redevelopment of the Site.

The City of Bremerton was the recipient of an EPA Brownfields Assessment Grant (EPA Project No. BF-9604651-0) for this Site in 2006. EPA has also offered to conduct a Targeted Brownfields Assessment (TBA) at the Site. Based on earlier meetings between the City, EPA, the property owners and other stakeholders, it was decided that the best way to maximize the EPA assessment grant and TBA was for GeoEngineers to complete a preliminary assessment at areas of highest concern, including groundwater. The EPA will then complete the TBA focusing on delineating soil and groundwater contamination identified in the upland portion of the Site. It is then planned that GeoEngineers will prepare a Remedial Investigation/Feasibility Study (RI/FS) based on the results of the preliminary and TBA results.

It is our understanding that the City of Bremerton and the property owners intend to enter this Site into Ecology's Voluntary Cleanup Program (VCP). Ecology will be the lead regulatory agency and will review and comment on documents and will provide technical support, and ultimately, an opinion through the Voluntary Cleanup Program.

2.0 SCOPE OF SERVICES

The primary objective of our proposed scope of work was to assess soil and shallow groundwater quality in potential contaminant source areas that have been identified in previous studies. A description of the field methods and detailed sampling protocol is included in Appendix A.

GeoEngineers completed the following specific scope of services for the preliminary soil and groundwater assessment:

1. Prepared a site-specific health and safety plan, which was used by GeoEngineers personnel during activities conducted at the site.
2. Conducted a site visit to mark proposed exploration locations.
3. Arranged for utilities to be located in the vicinity of the proposed explorations by public and private locating services.
4. Monitored the completion of eight soil explorations to depths down to 45 feet below ground surface (bgs), refusal or five feet below the initial water table, whichever occured first. The eight soil explorations were advanced using a truck-mounted hollow-stem auger (HSA) drilling rig, and

were converted into permanent 2-inch diameter polyvinyl chloride (PVC) groundwater monitoring wells.

5. Collected soil samples from each of the soil boring explorations and screened soil samples for evidence of impact by hazardous substances using visual, headspace vapor, and water sheen screening methods.
6. Submitted selected soil and groundwater samples for laboratory analysis of:
    a. Gasoline- and diesel-range petroleum hydrocarbons by Methods NWTPH-Gx and NWTPH-Dx (with silica gel cleanup);
    b. Volatile organic compounds (VOCs) by EPA Method 5035/8260B;
    c. Semivolatile organic compounds (SVOCs) by EPA Method 8270 SIM;
    d. Polychlorinated biphenyls (PCBs) by EPA Method 8082; and
    e. Priority pollutant list (PPL) metals and chromium VI by EPA 6000/7000 series methods and tributyltin (TBT) by Krone (GC/MS).
7. Evaluated chemical analytical results relative to Ecology's Model Toxics Control Act (MTCA) Method A or Method B cleanup levels.

Please note that due to the current zoning, and based on our understanding of the future Site use (as a possible marina and boat maintenance facility) it is likely that other cleanup levels may be applicable for this Site. Appropriate cleanup levels will be developed as part of the RI/FS process. For the purpose of this report, we have elected to reference MTCA Method A and Method B cleanup levels for comparative purposes only. The actual cleanup levels that are determined to be protective of human health and the environment could be greater than or less than the cleanup levels referenced in this report.

3.0 SITE CONDITIONS

3.1 GENERAL

The Site is comprised of tax parcel numbers 3711-000-001-0409 and 3711-000-001-0607 (McConkey parcels) and tax parcel number 3711-000-022-0101 (Sesko parcel). The Site is located at 1725 Pennsylvania Avenue approximately one mile north-northwest of downtown Bremerton and immediately south of Port Washington Narrows in Bremerton, Kitsap County, Washington. The Site is bounded by Thompson Drive to the west, Pennsylvania Avenue and residential properties to the east, the Port Washington Narrows waterway to the north, and a third McConkey-owned parcel to the south.

The three tax parcels total approximately 3.7 acres. Two of the parcels are currently owned by Paul and Margaret McConkey. The third parcel is currently owned by Natacha Sesko. The City of Bremerton has an easement for the City's storm drain within the Site boundary and a Right-of Way adjacent to the east of the Sesko parcel. Several warehouse structures are present on the Site, which is currently used for light industrial purposes and storage of various materials, including boat parts and metal debris. According to the November 10, 2006 Phase I Environmental Site Assessments (ESAs) prepared by TechLaw, Inc. for the Site, each of the tax parcels is zoned as "Marine Industrial."

The available historical information indicates the Site has an extensive history of industrial use. The most notable historical industrial occupants include a coal gasification plant, petroleum bulk storage and distribution plant, sheet metal fabricator, drum storage facilities, boat and vehicle repair facilities, sandblasting and painting operation, and salvage yard. A concrete manufacturing plant was formerly

located off-Site to the south. A petroleum bulk storage facility (SC Fuels) currently is located adjacent to the east of the north portion of the Site, and a former petroleum bulk storage facility (ARCO) is located west of the north portion of the Site.

GeoEngineers completed preliminary site characterization activities to evaluate soil and groundwater conditions beneath the property.

3.2 SUBSURFACE CONDITIONS AND CHEMICAL ANALYTICAL RESULTS

3.2.1 General

GeoEngineers monitored the completion of eight groundwater monitoring wells (MW-1 through MW-8) between May 21, and May 24, 2007. The soil borings/monitoring wells were advanced to depths ranging from 20 to 45 feet bgs. The approximate boring locations are shown on Figure 2. Details of the field exploration program, and logs for the borings are presented in Appendix A.

Field screening was performed on soil samples obtained from the borings. A description of the field methods is included in Appendix A. Field screening results are presented in the boring logs.

3.2.2 Soil

Soil samples were collected at five-foot intervals in each boring and observed to document soil lithology, color, moisture content, and field-screened for physical evidence of contamination. The general soil lithology encountered during soil boring completion consisted of silty sand and sandy silt fill overlying silty sand and glacial till with variable gravel. The fill layer was present across the Site and varied from approximately 5 to 15 feet thick.

As described in Appendix A, a minimum of two soil samples collected from each soil boring location were submitted for chemical analysis. Soil sample depths were selected based on field screening evidence. Selected soil samples obtained from the borings were submitted to TestAmerica Laboratory in Bothell, Washington for chemical analysis.

Gasoline-, diesel-, and oil-range hydrocarbons and/or VOCs were reported in the soil samples tested from each of the eight soil borings completed at the Site. The gasoline- and diesel-range hydrocarbons concentrations reported in the soil samples collected from MW-3 (at 5 feet bgs), MW-4 (at 15 and 30 feet bgs), MW-6 (at 10 feet bgs), and MW-7 (at 25 feet bgs) exceeded the MTCA Method A cleanup levels for the constituents identified. In addition, the oil-range hydrocarbons concentration reported in the soil sample collected from MW-3 (at 5 feet bgs) exceeded the MTCA Method A cleanup level for oil-range hydrocarbons. Benzene, naphthalene, and xylenes were also reported at concentrations exceeding their respective MTCA Method A cleanup levels at multiple locations throughout the Site (see Figure 3).

Arsenic was reported at a concentration of 48.4 milligrams per kilogram (mg/kg) in 1 of the 17 samples submitted for analysis for this constituent. This reported concentration exceeds the MTCA Method A cleanup level for arsenic of 20 mg/kg. The remaining metals were either not identified at concentrations above the laboratory's sample quantitation limit, or were reported at concentrations that do not exceed the applicable MTCA Method A cleanup levels. PCBs were not detected in any of the soil samples submitted for chemical analysis from the Site.

SVOCs and PAHs were reported in 14 of the 17 soil samples collected throughout the Site. Laboratory-reported carcinogenic polycyclic aromatic hydrocarbon (cPAH) concentrations from twelve of the sample

locations exceeded the MTCA Method A toxicity equivalent (TEQ) value for total cPAHs of 0.1 mg/kg. The remaining detections did not exceed the MTCA Method A cleanup level. In addition, the naphthalene concentrations reported in 6 of the 17 soil samples exceeded the MTCA Method A cleanup level for naphthalene. Chemical analytical results for the soil samples are summarized in Table 1 through Table 3. Laboratory reports are presented in Appendix B.

3.2.3 Groundwater

Groundwater was encountered at depths ranging from 15 to 35 feet bgs (elevations of 10.35 to 2.92 feet above mean sea level) during groundwater monitoring of the eight monitoring wells installed on the Site between May 21, and May 24, 2007. Groundwater samples were obtained from the eight groundwater monitoring wells using low-flow sampling techniques and were submitted to TestAmerica Laboratory in Bothell, Washington for chemical analysis.

Gasoline-, diesel-, and oil-range hydrocarbons and/or VOCs were identified in each of the nine groundwater samples collected from the property. The gasoline- and diesel-range hydrocarbons concentrations reported in the groundwater samples collected from MW-4, MW-6, and MW-8 exceeded the MTCA Method A cleanup levels for the constituents identified. In addition, the gasoline-range hydrocarbons concentration reported in the groundwater sample collected from MW-3 exceeded the MTCA Method A cleanup level for gasoline-range hydrocarbons. Benzene, naphthalene, and carbon tetracholride were also reported at concentrations exceeding their respective MTCA Method A cleanup levels (or Method B cleanup level in the case of carbon tetrachloride) at multiple locations throughout the Site (see Figure 5).

Reported concentrations of arsenic, chromium, and lead (at MW-3 and MW-4) and hexavalent chromium (at MW-5 and MW-8) in groundwater samples submitted for analysis exceed the applicable MTCA Method A cleanup levels for these constituents. The remaining metals were either reported at concentrations that do not exceed the applicable MTCA Method A cleanup levels, or were not identified at concentrations above the laboratory's sample quantitation limit. PCBs were not identified in any of the groundwater samples collected at the property.

SVOCs and PAHs were reported in 6 of the 8 groundwater samples collected throughout the Site. Laboratory-reported cPAH concentrations from five of the sample locations (MW-3, MW-4, MW-5, MW-6, and MW-8) exceeded the MTCA Method A toxicity equivalent (TEQ) value for total cPAHs of 0.1 microgram per liter (µg/L). In addition, the naphthalene concentration reported in the groundwater sample collected from MW-4, and the pentachlorophenol concentration reported in the groundwater sample collected from MW-8 exceeded the MTCA Method A cleanup level for the constituents identified. The remaining detections did not exceed the applicable MTCA Method A cleanup levels. Chemical analytical results for the groundwater samples are summarized in Table 4 through Table 6. Laboratory reports are presented in Appendix B.

4.0 FINDINGS

A Preliminary Upland Assessment was conducted at the McConkey/Sesko Site located at 1725 Pennsylvania Avenue in Bremerton, Kitsap County, Washington from May through June 2007. The purpose of the study was to assess the potential presence of hazardous substances in soil and shallow groundwater at potential contaminant source areas that were identified in previous studies. The findings are:

- Soil at the Site is impacted with VOCs, gasoline-, diesel-, and oil-range hydrocarbons, arsenic and cPAHs at concentrations exceeding the applicable MTCA Method A Method B cleanup levels for these constituents. These contaminants were observed in the vicinity of former bulk fuel and gas plant facilities, generally from ground surface downward to depths greater than 30 feet bgs.
- Groundwater at the Site is impacted with VOCs, gasoline-, and diesel-range hydrocarbons, arsenic, chromium, hexavalent chromium, lead, SVOCs, and cPAHs at concentrations exceeding the applicable MTCA Method A or Method B cleanup levels for these constituents.

The objective of the assessment activities was to assess the potential presence of hazardous substances in soil and shallow groundwater at potential contaminant source areas. Additional site assessment activities would be required to evaluate the extent and magnitude of the documented release(s) identified.

5.0 LIMITATIONS

This Preliminary Upland Assessment has been prepared for the exclusive use of the City of Bremerton and their authorized agents. GeoEngineers has performed this Preliminary Upland Assessment at the McConkey/Sesko Site located at 1725 Pennsylvania Avenue in Bremerton, Kitsap County, Washington in general accordance with the scope and limitations of our services agreement dated December 20, 2006 (amended on May 29, 2007). No other party may rely on the product of our services unless we agree in advance and in writing to such reliance. Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted environmental science practices in this area at the time this report was prepared. No warranty or other conditions, express or implied, should be understood. No study can wholly eliminate uncertainty regarding environmental conditions at a site. There is always a potential that areas of contamination exist that were not identified during past studies.

Any electronic form, facsimile or hard copy of the original document (email, text, table, and/or figure), if provided, and any attachments are only a copy of the original document. The original document is stored by GeoEngineers, Inc. and will serve as the official document of record.

Please refer to Appendix C titled "Report Limitations and Guidelines for Use" for additional information pertaining to use of this report.

TABLE 1
SUMMARY OF SITE CHARACTERIZATION SOIL DATA
PETROLEUM HYDROCARBONS AND VOCs
OLD BREMERTON GASWORKS BROWNFIELD SITE
BREMERTON, WASHINGTON

Sample Name[1]	Sample Depth (feet bgs)	Sample Elevation (feet AMSL)	Date Sampled	Field Screening Results[2]		Petroleum Hydrocarbons (mg/kg)[3]			VOCs[4]
				Headspace Vapors (ppm)	Sheen	Gasoline-Range	Diesel-Range	Heavy Oil-Range	(mg/kg)
MW-1	5.0	40.5	5/21/2007	<1.0	NS	<13.2	<13.2	<32.9	ND
	35.0	10.5	5/21/2007	74.1	SS	<10.3	<12.1	<30.3	n-Hexane - 0.00121 Methylene Chloride - 0.0108 Trichloroethene - 0.00147
MW-2	10.0	33.0	5/21/2007	13.6	MS	21.9	617	965	**Benzene - 0.139** Ethylbenzene - 0.295 Naphthalene - 1.24 Total Xylenes - 0.353
	40.0	3.0	5/21/2007	25.0	NS	<12.3	<12.3	<30.7	ND
MW-3	5.0	34.7	5/22/2007	>2,000	SS	**645**	**6,710**	**2,250**	**Benzene - 1.93** Ethylbenzene - 3.29 p-Isopropyltoluene - 0.808 **Naphthalene - 465** Toluene - 1.41 1,2,4-Trimethylbenzene - 6.70 1,3,5-Trimethylbenzene - 2.41 Total Xylenes - 8.71
	25.0	14.7	5/22/2007	>2,000	NS	<10.8	<10.7	<26.6	Acetone - 0.0233 Naphthalene - 0.00914
MW-4	15.0	20.7	5/23/2007	76.9	HS	**185**	**2,960**	412	Ethylbenzene - 0.893 p-Isopropyltoluene - 0.493 **Naphthalene - 63.9** 1,2,4-Trimethylbenzene - 1.92 1,3,5-Trimethylbenzene - 0.426 Total Xylenes - 1.51
	30.0	5.7	5/23/2007	646	HS	**635**	**4,370**	<274	n-Butylbenzene - 1.96 sec-Butylbenzene - 0.748 Ethylbenzene - 1.80 Isopropylbenzene - 0.6 p-Isopropyltoluene - 1.49 **Naphthalene - 50.7** n-Propylbenzene - 0.952 1,2,4-Trimethylbenzene - 8.31 Total Xylenes - 2.60
MW-5	10.0	8.4	5/24/2007	1,426	SS	<5.62	402	232	Benzene - 0.00779 Ethylbenzene - 0.011 Naphthalene - 0.00841
	20.0	-1.60	5/24/2007	NM	NS	<5.69	<11.6	<29.0	**Benzene - 0.0416** Toluene - 0.143
MW-6	5.0		5/22/2007	>2,000	NS	<11.5	<11.4	<28.5	ND
	10.0	25.5	5/22/2007	186	MS	**541**	**3,770**	390	**Naphthalene - 2,290** Toluene - 5.0 1,2,4-Trimethylbenzene - 13.2 1,3,5-Trimethylbenzene - 3.67 **Total Xylenes - 16.7**
	35.0	0.5	5/22/2007	104	SS	<9.16	<11.2	<28.1	Benzene - 0.00722 Ethylbenzene - 0.00475 Naphthalene - 0.177
MW-7	5.0	28.6	5/23/2007	183	SS	10.6	17.1	<30.6	Toluene - 0.198 1,2,4-Trimethylbenzene - 0.103 Total Xylenes - 0.363
	25.0	8.6	5/23/2007	328	HS	**216**	**30,200**	<2,900	n-Butylbenzene - 1.78 sec-Butylbenzene - 0.915 Ethylbenzene - 0.25 Isopropylbenzene - 0.418 p-Isopropyltoluene - 1.65 **Naphthalene - 14.7** n-Propylbenzene - 0.792 1,2,4-Trimethylbenzene - 6.85 1,3,5-Trimethylbenzene - 0.927 Total Xylenes - 0.421
MW-8	10.0	25.6	5/22/2007	10.1	SS	<11.8	<11.6	<29.0	ND
	25.0	10.6	5/22/2007	22.0	SS	<11.9	336	138	Styrene - 0.814
MTCA Method A Cleanup Level[5]						30	2,000	2,000	Acetone - 8,000 [6] Benzene - 0.03 n-Butylbenzene - NE sec-Butylbenzene - NE Ethylbenzene - 6.0 n-Hexane - 4,800 [6] Isopropylbenzene - 8,000 [6] p-Isopropyltoluene - 1,200 [6] Methylene Chloride - 0.02 Naphthalene - 5.0 n-Propylbenzene - NE Styrene - 33.0 [6] Trichloroethene - 0.03 1,2,4-Trimethylbenzene - 4,000 [6] 1,3,5-Trimethylbenzene - 4,000 [6] Toluene - 7.0 Total Xylenes - 9.0

Notes:

[1]The approximate exploration locations are shown on Figure 2.

[2]Field screening using a photoionization detector (PID) and sheen pan. NS=no sheen; SS=slight sheen; MS=moderate sheen; HS=heavy sheen.

[3]Analyzed by Ecology Method NWTPH-Gx, and/or Dx with acid-silica gel cleanup.

[4]Volatile organic compounds analyzed by EPA Method 8260B. Only those constituents detected above the sample quantitation limit are shown.

[5]For unrestricted land use. MTCA Method B cleanup levels are referenced when Method A cleanup levels are not available.

[6]MTCA Method B cleanup level.

mg/kg = milligrams per kilogram
ppm = parts per million
bgs = below ground surface
NM = not measured
AMSL = above mean sea level
NE=not established
MTCA = Model Toxics Control Act

Chemical analyses performed by TestAmerica Laboratories of Bothell, Washington.

Bolding/shading indicates detected analyte concentration exceeds the MTCA cleanup level.

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TABLE 2
SUMMARY OF SITE CHARACTERIZATION SOIL DATA
METALS AND PCBs
OLD BREMERTON GASWORKS BROWNFIELD SITE
BREMERTON, WASHINGTON

Sample Name[1]	Sample Depth (feet bgs)	Date Sampled	Total Metals[2] (mg/kg)														PCBs[3] (mg/kg)
			Antimony	Arsenic	Beryllium	Cadmium	Chromium	Chromium VI	Copper	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Tributyltin	Zinc	
MW-1	5.0	5/21/2007	<1.98	3.49	<0.661	<0.661	39.5	<1.2	24.8	3.86	<0.134	48.3	<0.661	<0.661	<0.661	<0.00076	61.7	<0.0328
	35.0		<1.82	1.35	<0.607	<0.607	19.8	<1.2	8.01	1.58	<0.111	32.5	<0.607	<0.607	<0.607	<0.00074	23.9	<0.0304
MW-2	10.0	5/21/2007	<1.69	3.18	<0.563	<0.563	35.0	<1.1	18.4	41.3	<0.107	40.6	<0.563	<0.563	<0.563	<0.00081	44.3	<0.0281
	40.0		<1.84	0.797	<0.613	<0.613	24.7	<1.2	10.1	1.34	<0.131	32.0	<0.613	<0.613	<0.613	<0.00080	24.7	<0.0308
MW-3	5.0	5/22/2007	<1.80	**48.40**	<0.600	<0.600	26.3	<1.1	37.8	87.0	<0.129	37.5	<0.600	<0.600	<0.600	<0.00079	166.00	<0.0588
	25.0		<1.62	1.27	<0.540	<0.540	23.9	<1.1	11.0	1.54	<0.0976	36.2	<0.540	<0.540	<0.540	<0.00069	24.9	<0.0273
MW-4	15.0	5/23/2007	<1.63	2.58	<0.544	<0.544	31.8	<1.1	23.3	13.9	<0.101	38.1	<0.544	<0.544	<0.544	<0.0014	67.2	<0.0587
	30.0		<1.53	4.80	<0.509	<0.509	46.5	<1.0	22.0	2.12	<0.0937	44.6	<0.509	<0.509	<0.509	<0.0014	34.8	<0.0553
MW-5	10.0	5/24/2007	<1.86	3.81	<0.620	<0.620	33.1	<1.1	79.1	131	1.62	61.1	<0.620	<0.620	<0.620	<0.0016	204	<0.00642
	20.0		<1.53	0.83	<0.511	<0.511	26.3	<1.2	11.1	1.44	<0.0941	34.6	<0.511	<0.511	<0.511	<0.0015	27.0	<0.00289
MW-6	5.0	5/22/2007	<1.64	1.64	<0.547	<0.547	33.1	<1.1	15.5	2.78	<0.113	38.6	<0.547	<0.547	<0.547	<0.00074	30.5	<0.0288
	10.0		<1.58	1.26	<0.527	<0.527	19.9	<1.1	9.47	1.36	<0.104	28.8	<0.527	<0.527	<0.527	<0.00072	22.7	<0.0508
	35.0		<1.82	0.84	<0.605	<0.605	24.8	<1.0	16.4	1.30	<0.111	33.3	<0.605	<0.605	<0.605	<0.0016	31.7	<0.0554
MW-7	5.0	5/23/2007	<1.84	2.72	<0.614	<0.614	40.1	<1.2	18.2	5.75	<0.111	51.8	<0.614	<0.614	<0.614	<0.0016	48.1	<0.0301
	25.0		<1.81	1.01	<0.604	<0.604	25.2	<1.0	12.5	1.67	<0.0956	43.3	<0.604	<0.604	<0.604	<0.0014	26.2	<0.0289
MW-8	10.0	5/22/2007	<1.77	6.72	<0.589	0.966	36.0	<1.0	68.1	246	0.392	42.1	<0.589	<0.589	<0.589	<0.00072	291	<0.0291
	25.0		<1.69	2.25	<0.562	<0.562	39.4	<1.1	23.3	4.75	<0.105	37.2	<0.562	<0.562	<0.562	<0.00076	48.0	<0.0301
MTCA Method A Cleanup Level[4]			**32[5]**	**20**	**160[5]**	**2**	**2,000**	**19**	**3000[5]**	**250**	**2**	**1600[5]**	**400[5]**	**400[5]**	**5.6[5]**	**2.4[5]**	**24,000[5]**	**1**

Notes:

[1]The approximate exploration locations are shown on Figure 2.

[2]Metals analyzed by EPA 6000/7000 series methods, except Tributyltin, which was analyzed by the Krone method.

[3]Polychlorinated biphenyls; analyzed by EPA Method 8082.

[4]For unrestricted land use. MTCA Method B cleanup levels are referenced when Method A cleanup levels are not available.

[5]MTCA Method B cleanup level.

bgs = below ground surface mg/kg = milligrams per kilogram

"--" = not analyzed MTCA = Model Toxics Control Act

Chemical analyses performed by TestAmerica Laboratories of Bothell, Washington.

Bolding/shading indicates detected analyte concentration exceeds the MTCA cleanup level.

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TABLE 3
SUMMARY OF SITE CHARACTERIZATION SOIL DATA
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs)
OLD BREMERTON GASWORKS BROWNFIELD SITE
BREMERTON, WASHINGTON

Sample Number[1]	Sample Depth (feet bgs)	Date Sampled	Non-carcinogenic PAHs[2] (mg/kg)								
			Acenaph-thene	Acenaph-thylene	Anthtra-cene	Benzo(ghi)-perylene	Fluoran-thene	Fluorene	Naph-thalenes	Phenan-threne	Pyrene
MW-1	5.0	5/21/2007	<0.0130	<0.0130	<0.0130	<0.0130	<0.0130	<0.0130	<0.0130	<0.0130	<0.0130
	35.0	5/21/2007	<0.0120	<0.0120	<0.0120	<0.0120	<0.0120	<0.0120	<0.0120	<0.0120	<0.0120
MW-2	10.0	5/21/2007	0.671	3.51	2.05	10.6	11.9	1.27	**6.48**	6.67	18.4
	40.0	5/21/2007	<0.0123	<0.0123	<0.0123	<0.0123	<0.0123	<0.0123	<0.0123	<0.0123	<0.0123
MW-3	5.0	5/22/2007	18.5	204	273	31.9	137	182	**835**	379	192
	25.0	5/22/2007	0.0108	0.0151	<0.0108	<0.0108	<0.0108	0.0130	0.0662	0.0122	<0.0108
MW-4	15.0	5/23/2007	6.12	2.19	23.6	8.66	33.6	20.2	**50**	65.7	53.1
	30.0	5/23/2007	18.3	1.49	11.6	4.04	15.6	13.4	**147.3**	37.3	24.9
MW-5	10.0	5/24/2007	<0.612	3.02	11.1	14.6	49.90	4.57	4.69	50.8	85.5
	20.0	5/24/2007	0.0205	<0.0114	0.0198	<0.0114	0.0122	<0.0114	0.0547	0.0843	0.0137
MW-6	5.0	5/22/2007	<0.0230	0.0490	0.0613	0.0398	0.123	0.0659	0.0245	0.253	0.161
	10.0	5/22/2007	31.2	303	233	79.0	321	313	**1,398**	856	428
	35.0	5/22/2007	<0.114	0.523	0.774	0.159	0.933	0.781	3.70	2.66	1.27
MW-7	5.0	5/23/2007	<0.243	<0.243	<0.243	1.98	3.22	<0.243	<0.243	0.648	3.87
	25.0	5/23/2007	<0.566	<0.566	<0.566	0.604	4.0	4.53	**84.7**	13.7	5.28
MW-8	10.0	5/22/2007	<1.47	<1.47	1.47	<1.47	<1.47	<1.47	<1.47	4.21	1.96
	25.0	5/22/2007	<1.48	6.24	14.9	39.5	65.2	<1.48	<1.48	17.2	147
MTCA Method A Cleanup Level[3]			**4,800 [4]**	**NE**	**24,000 [4]**	**NE**	**3,200 [4]**	**3,200 [4]**	**5**	**NE**	**2,400 [4]**

Sample Number[1]	Sample Depth (feet bgs)	Date Sampled	Carcinogenic PAHs[2] (mg/kg)							
			Benzo(a)-anthracene	Benzo(a)-pyrene	Benzo(b)-fluoranthene	Benzo(k)-fluoranthene	Chrysene	Dibenz(a,h)-anthracene	Indeno(1,2,3-cd)-pyrene	Total cPAHs (TEQ)[5]
MW-1	5.0	5/21/2007	<0.0130	<0.0130	<0.0130	<0.0130	<0.0130	<0.0130	<0.0130	---
	35.0	5/21/2007	<0.0120	<0.0120	<0.0120	<0.0120	<0.0120	<0.0120	<0.0120	---
MW-2	10.0	5/21/2007	**5.44**	**11.5**	**6.94**	**6.00**	**9.17**	**2.09**	**6.49**	**14.9**
	40.0	5/21/2007	<0.0123	<0.0123	<0.0123	<0.0123	<0.0123	<0.0123	<0.0123	---
MW-3	5.0	5/22/2007	**59.7**	**58.9**	**26.1**	**34.9**	**69.2**	**8.48**	**26.8**	**77.7**
	25.0	5/22/2007	<0.0108	<0.0108	<0.0108	0.0130	<0.0108	<0.0108	<0.0108	---
MW-4	15.0	5/23/2007	**11.8**	**11.9**	**5.93**	**7.93**	**13.7**	**2.35**	**6.31**	**16.2**
	30.0	5/23/2007	**5.03**	**6.81**	**2.62**	**3.83**	**6.66**	**1.28**	**2.91**	**8.83**
MW-5	10.0	5/24/2007	**21.0**	**16.7**	**12.5**	**14.6**	**28.90**	**4.37**	**11.1**	**24.7**
	20.0	5/24/2007	<0.0114	<0.0114	<0.0114	0.0129	<0.0114	<0.0114	<0.0114	---
MW-6	5.0	5/22/2007	0.0475	0.0782	0.0368	0.0536	0.0644	0.0245	0.0368	**0.11**
	10.0	5/22/2007	**113**	**116**	**57.4**	**60.6**	**146**	**22.8**	**58.5**	**155.5**
	35.0	5/22/2007	**0.265**	**0.394**	**0.152**	**0.250**	**0.349**	<0.114	0.129	**0.5**
MW-7	5.0	5/23/2007	**1.22**	**1.78**	**1.22**	**1.49**	**2.03**	**0.486**	**1.52**	**2.54**
	25.0	5/23/2007	**1.21**	**1.85**	**0.754**	**1.24**	**1.58**	**<0.566**	**0.604**	**2.35**
MW-8	10.0	5/22/2007	<1.47	**2.84**	<1.47	**1.76**	<1.47	<1.47	<1.47	**3.54**
	25.0	5/22/2007	**37.6**	**47.0**	**27.3**	**29.0**	**53.1**	**10.3**	**28.7**	**63.9**
MTCA Method A Cleanup Level[3]			**0.137 [4]**	**0.1**	**0.137 [4]**	**0.137 [4]**	**0.137 [4]**	**0.137 [4]**	**0.137 [4]**	**0.1**

Notes:
[1]The approximate exploration locations are shown in Figure 2.
[2]Analyzed by EPA Method 8270 SIM.
[3]For unrestricted land use. MTCA Method B cleanup levels are referenced when Method A cleanup levels are not available.
[4]MTCA Method B cleanup level.
[5]Cleanup level for total carcinogenic PAHs; calculated using toxic equivalent (TEQ) relative to benzo(a)pyrene per WAC 173-340-780(8). cPAHs that were not detected were assigned a value of one-half the detection limit for these calculations.
mg/kg = milligrams per kilogram bgs = below ground surface
NE = not established MTCA = Model Toxics Control Act
Chemical analyses performed by TestAmerica Laboratories of Bothell, Washington.
Bolding/shading indicates detected analyte concentration exceeds the MTCA cleanup level.

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TABLE 4
SUMMARY OF SITE CHARACTERIZATION GROUNDWATER DATA
PETROLEUM HYDROCARBONS AND VOCs
OLD BREMERTON GASWORKS BROWNFIELD SITE
BREMERTON, WASHINGTON

Sample Name[1]	Date Sampled	Monitoring Well Top of Casing Elevation (feet AMSL)	Depth to Groundwater (feet bgs)	Groundwater Elevation (feet AMSL)	Petroleum Hydrocarbons (ug/L)[2]			VOCs[3] (ug/L)
					Gasoline-Range	Diesel-Range	Heavy Oil-Range	
MW-1	6/1/2007	45.03	34.68	10.35	<50.0	<236	<472	**Carbon Tetrachloride - 0.660** Chloroform - 2.84 Trichloroethene - 4.79
MW-2	6/1/2007	42.54	35.25	7.29	63.5	<236	<472	**Benzene - 18.4** Chloroform - 1.42 1,2-Dichloroethane - 4.72 Trichloroethene - 0.610
MW-3	6/1/2007	39.10	32.90	6.20	**2,800**	<236	<472	**Benzene - 826** n-Butylbenzene - 0.480 sec-Butylbenzene - 0.370 Chloroform - 0.20 1,2-Dichloroethane - 3.06 cis-1,2-Dichloroethene - 0.370 Ethylbenzene - 151 Isopropylbenzene - 5.29 p-Isopropyltoluene - 0.90 **Naphthalene - 345** n-Propylbenzene - 6.41 Toluene - 4.21 Trichloroethene - 0.330 1,2,4-Trimethylbenzene - 9.36 1,3,5-Trimethylbenzene - 1.87 Total Xylenes - 39.6
MW-4	6/1/2007	35.20	29.32	5.88	**10,600**	**18,500**	<2,360	**Benzene - 25.9** n-Butylbenzene - 6.10 sec-Butylbenzene - 4.80 cis-1,2-Dichloroethene - 1.29 Ethylbenzene - 308 Isopropylbenzene - 40.0 p-Isopropyltoluene - 8.90 **Naphthalene - 5,270** n-Propylbenzene - 9.70 Toluene - 45.4 Trichloroethene - 0.630 1,2,4-Trimethylbenzene - 176 1,3,5-Trimethylbenzene - 33.5 Total Xylenes - 536

Sample Name[1]	Date Sampled	Monitoring Well Top of Casing Elevation (feet AMSL)	Depth to Groundwater (feet bgs)	Groundwater Elevation (feet AMSL)	Petroleum Hydrocarbons (ug/L)[2]			VOCs[3] (ug/L)
					Gasoline-Range	Diesel-Range	Heavy Oil-Range	
MW-5	6/1/2007	18.51	15.21	3.30	481	<236	<472	**Benzene - 85.1** Ethylbenzene - 10.1 Isopropylbenzene - 5.25 Naphthalene - 25.5 Toluene - 0.450 1,2,4-Trimethylbenzene - 3.52 1,3,5-Trimethylbenzene - 0.530 Total Xylenes - 8.29
MW-6	6/1/2007	34.95	30.20	4.75	**3,450**	**540**	<472	**Benzene - 950** n-Butylbenzene - 0.590 sec-Butylbenzene - 0.360 1,2-Dichloroethane - 0.930 cis-1,2-Dichloroethene - 0.740 Ethylbenzene - 187 n-Hexane - 1.17 Isopropylbenzene - 8.93 p-Isopropyltoluene - 0.270 Naphthalene - 54.9 n-Propylbenzene - 3.14 Toluene - 3.07 1,2,4-Trimethylbenzene - 10.3 1,3,5-Trimethylbenzene - 1.26 Total Xylenes - 19.2
MW-6 (Duplicate)	6/1/2007	34.95	30.20	4.75	**3,400**	**646**	<0.472	**Benzene - 826** n-Butylbenzene - 0.520 sec-Butylbenzene - 0.400 1,2-Dichloroethane - 0.850 cis-1,2-Dichloroethene - 0.770 Ethylbenzene - 160 Isopropylbenzene - 8.90 p-Isopropyltoluene - 0.250 Naphthalene - 64.6 n-Propylbenzene - 3.29 Toluene - 3.17 1,2,4-Trimethylbenzene - 10.6 1,3,5-Trimethylbenzene - 1.22 Total Xylenes - 20.3
MW-7	6/1/2007	33.24	30.21	3.03	174	447	<472	Benzene - 2.23 sec-Butylbenzene - 0.320 Ethylbenzene - 0.530 Naphthalene - 3.19 Trichloroethene - 0.400

Sample Name[1]	Date Sampled	Monitoring Well Top of Casing Elevation (feet AMSL)	Depth to Groundwater (feet bgs)	Groundwater Elevation (feet AMSL)	Petroleum Hydrocarbons (ug/L)[2]			VOCs[3] (ug/L)
					Gasoline-Range	Diesel-Range	Heavy Oil-Range	
MW-8	6/1/2007	35.56	32.64	2.92	**4,850**	**1,860**	<472	**Benzene - 650** n-Butylbenzene - 0.580 sec-Butylbenzene - 0.570 Ethylbenzene - 244 Isopropylbenzene - 8.15 p-Isopropyltoluene - 1.17 **Naphthalene - 1,070** n-Propylbenzene - 2.38 Toluene - 1.49 1,2,4-Trimethylbenzene - 49.0 1,3,5-Trimethylbenzene - 5.60 Total Xylenes - 211
MTCA Method A Cleanup Level[4]					800	500	500	Benzene - 5.0 n-Butylbenzene - NE sec-Butylbenzene - NE Carbon Tetrachloride - 0.34 [5] Chloroform - 7.2 [5] 1,2-Dichloroethane - 5.0 cis-1,2-Dichloroethene - 80 [5] Ethylbenzene - 700 n-Hexane - 480 [5] Isopropylbenzene - 800 [5] p-Isopropyltoluene - NE Naphthalene - 160 n-Propylbenzene - NE Toluene - 1,000 Trichloroethene - 5.0 1,2,4-Trimethylbenzene - 400 [5] 1,3,5-Trimethylbenzene - 400 [5] Total Xylenes - 1,000

Notes:

[1]The approximate exploration locations are shown on Figure 2.

[2]Analyzed by Ecology Method NWTPH-Gx and NWTPH-Dx with silica gel cleanup.

[3]Volatile organic compounds analyzed by EPA Method 8060B. Only those constituents detected above the sample quantitation limit are reported.

[4]For unrestricted land use. MTCA Method B cleanup levels are referenced when Method A cleanup levels are not available.

[5]MTCA Method B cleanup level.

µg/L = micrograms per liter ND = not detected

feet AMSL = feet above mean sea level feet bgs = feet below ground surface

MTCA = Model Toxics Control Act

Chemical analyses performed by TestAmerica Laboratories of Bothell, Washington.

Bolding/shading indicates detected analyte concentration exceeds the MTCA cleanup level.

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TABLE 5
SUMMARY OF SITE CHARACTERIZATION GROUNDWATER DATA
DISSOLVED METALS AND PCBs
OLD BREMERTON GASWORKS BROWNFIELD SITE
BREMERTON, WASHINGTON

Sample Name[1]	Date Sampled	Dissolved Metals[2] (ug/L)														PCBs[3]
		Antimony	Arsenic	Beryllium	Cadmium	Chromium	Chromium VI	Copper	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Tributyltin	Zinc	(ug/L)
MW-1	6/1/2007	<3.0	1.54	<1.0	<1.0	11.8	6.0	10.1	1.55	<0.2	18.7	<1.0	<1.0	<1.0	<0.0019	13.4	<0.1
MW-2	6/1/2007	<3.0	1.08	<1.0	<1.0	5.15	<5.0	3.4	<1.0	<0.2	7.24	<1.0	<1.0	<1.0	<0.0019	<10.0	<0.1
MW-3	6/1/2007	<3.0	**14.2**	1.07	<1.0	**228**	48.0	130	**18.3**	0.246	232	<1.0	<1.0	<1.0	<0.0019	185	<0.1
MW-4	6/1/2007	<3.0	**26.0**	1.08	<1.0	**177**	33.0	143	**21.6**	<0.2	180	<1.0	<1.0	<1.0	<0.0019	155	<0.1
MW-5	6/1/2007	<3.0	2.83	<1.0	<1.0	6.07	**61.0**	9.0	5.12	<0.2	89.7	3.64	<1.0	<1.0	<0.0019	32.1	<0.1
MW-6	6/1/2007	<3.0	4.80	<1.0	<1.0	1.34	23.0	1.05	<1.0	<0.2	1.65	<1.0	<1.0	<1.0	<0.0019	<10.0	<0.1
MW-6 (Duplicate)	6/1/2007	<3.0	4.43	<1.0	<1.0	1.06	33.0	<1.0	<1.0	<0.2	1.32	<1.0	<1.0	<1.0	<0.0019	<10.0	<0.1
MW-7	6/1/2007	<3.0	1.43	<1.0	<1.0	15.6	11.0	13.1	2.23	<0.2	20.2	<1.0	<1.0	<1.0	<0.0019	18.0	<0.1
MW-8	6/1/2007	<3.0	4.69	<1.0	<1.0	9.28	**90.0**	8.94	4.47	<0.2	14.4	<1.0	<1.0	<1.0	<0.0019	12.7	<0.1
MTCA Method A Cleanup Level[4]		**6.4[5]**	**5**	**32[5]**	**5**	**100**	**50**	**590[5]**	**15**	**2**	**320[5]**	**80[5]**	**80[5]**	**1.1[5]**	**NE**	**4,800[5]**	**0.1**

Notes:

[1]The approximate exploration locations are shown on Figure 2.

[2] Metals analyzed by EPA 6000/7000 series methods, except Tributyltin, which was analyzed by the Krone method.

[3]Polychlorinated biphenyls; analyzed by EPA Method 8082.

[4]For unrestricted land use. MTCA Method B cleanup levels are referenced when Method A cleanup levels are not available.

[5]MTCA Method B cleanup level.

µg/l = micrograms per liter

MTCA = Model Toxics Control Act

Chemical analyses performed by TestAmerica Laboratories of Bothell, Washington.

Bolding/shading indicates detected analyte concentration exceeds the MTCA cleanup level

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TABLE 6
SUMMARY OF SITE CHARACTERIZATION GROUNDWATER DATA
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs) AND POLYCYCLIC AROMATIC HYDROCARBONS (PAHs)
OLD BREMERTON GASWORKS BROWNFIELD SITE
BREMERTON, WASHINGTON

Sample Number[1]	Date Sampled	Non-carcinogenic PAHs[2] (ug/L)									SVOCs (ug/L)		
		Acenaph-thene	Acenaph-thylene	Anthtra-cene	Benzo(ghi)-perylene	Fluoran-thene	Fluorene	Naph-thalenes	Phenan-threne	Pyrene	Dibenzo furan	Phenol	Pentachloro phenol
MW-1	6/1/2007	<0.102	<0.102	<0.102	<0.102	<0.102	<0.102	<0.102	<0.102	<0.102	<10.2	<10.2	<10.2
MW-2	6/1/2007	<0.0971	<0.0971	<0.0971	<0.0971	<0.0971	<0.0971	<0.0971	<0.0971	<0.0971	<9.71	<9.71	<9.71
MW-3	6/1/2007	1.1	3.26	4.72	0.0979	1.95	3.31	2.185	5.78	2.36	<9.71	75.5	<9.71
MW-4	6/1/2007	**361**	<94.3	120	<94.3	122	188	**5,612**	377	158	31.8	<9.43	<9.43
MW-5	6/1/2007	11.7	3.10	0.726	0.639	3.29	1.36	1.20	1.46	3.90	<9.43	<9.43	<9.43
MW-6	6/1/2007	13.5	23.5	4.23	0.221	8.33	9.43	67.0	5.73	9.39	<9.43	77.5	<9.43
MW-6 (Duplicate)	6/1/2007	11.0	18.9	1.32	0.104	7.38	5.10	0.445	<0.0943	8.13	<9.43	62.6	<9.43
MW-7	6/1/2007	<0.0943	0.222	<0.0943	<0.0943	<0.0943	0.102	0.184	<0.0943	0.174	<9.43	<9.43	<9.43
MW-8	6/1/2007	7.10	14.0	0.891	0.50	1.72	0.873	3.08	1.04	2.92	<9.90	81.6	11.4
MTCA Method A Cleanup Level[3]		160	NE	9600 [4]	640 [4]	NE	4800 [4]	640 [4]	480 [4]	NE	32 [4]	4800 [4]	0.73 [4]

Sample Number[1]	Date Sampled	Carcinogenic PAHs[2] (ug/L)							
		Benzo(a)-anthracene	Benzo(a)-pyrene	Benzo(b)-fluoranthene	Benzo(k)-fluoranthene	Chrysene	Dibenz(a,h)-anthracene	Indeno(1,2,3-cd)-pyrene	Total cPAHs (TEQ)[3]
MW-1	6/1/2007	<0.0102	<0.0102	<0.0102	<0.0102	<0.0102	<0.0102	<0.0102	---
MW-2	6/1/2007	<0.00971	<0.00971	<0.00971	<0.00971	<0.00971	<0.00971	<0.00971	---
MW-3	6/1/2007	**0.389**	**0.217**	**0.0968**	**0.227**	**0.432**	**0.0437**	**0.0874**	**0.32**
MW-4	6/1/2007	**39.3**	**37.6**	**<9.43**	**<9.43**	**40.8**	**<9.43**	**<9.43**	**45.24**
MW-5	6/1/2007	**0.884**	**0.905**	**0.637**	**0.615**	**1.16**	**0.189**	**0.467**	**1.25**
MW-6	6/1/2007	**0.727**	**0.345**	**0.272**	**0.281**	**0.772**	**0.0678**	**0.167**	**0.52**
MW-6 (Duplicate)	6/1/2007	**0.430**	**0.158**	**0.115**	**0.189**	**0.392**	**0.0723**	**0.0985**	**0.27**
MW-7	6/1/2007	**0.0168**	**0.0247**	<0.00943	**0.0602**	0.0372	<0.00943	<0.00943	0.0331
MW-8	6/1/2007	**0.694**	**0.878**	**0.657**	**0.494**	**0.836**	**0.170**	**0.433**	**1.18**
MTCA Method A Cleanup Level[3]		0.012 [4]	0.1	0.012 [4]	0.012 [4]	0.012 [4]	0.012 [4]	0.012 [4]	0.1

Notes:

[1]The approximate exploration locations are shown in Figure 2.

[2]Analyzed by EPA Method 8270 SIM.

[3]For unrestricted land use. MTCA Method B cleanup levels are referenced when Method A cleanup levels are not available.

[4]MTCA Method B cleanup level

µg/L = micrograms per liter

MTCA = Model Toxics Control Act

NE = not established

Chemical analyses performed by TestAmerica Laboratories of Bothell, Washington.

Bolding/shading indicates detected analyte concentration exceeds the MTCA cleanup level.

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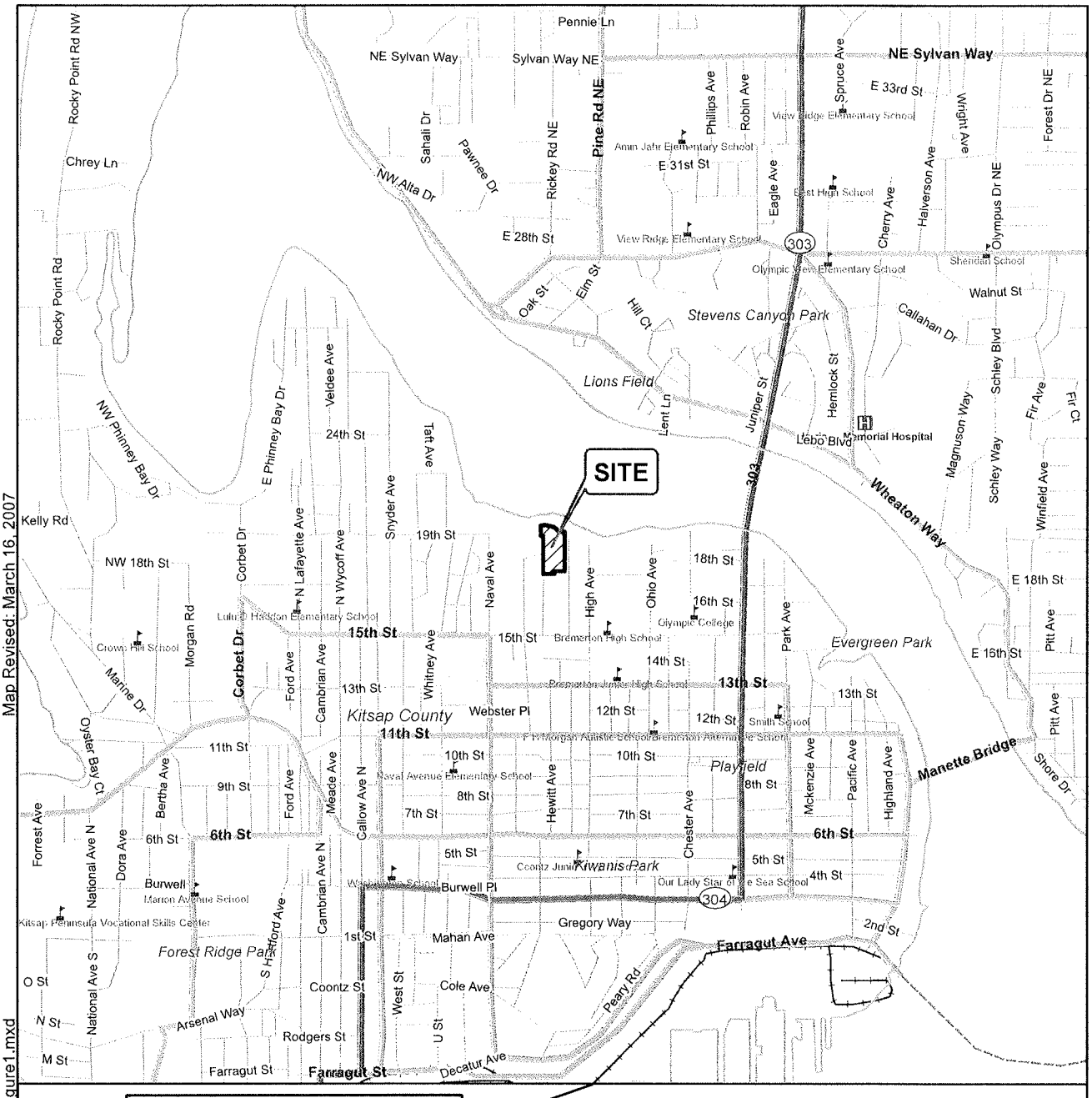

Map Revised: March 16, 2007

Office: SEAT Path: P:\0\08920017\00\GIS\08920017\00Figure1.mxd

Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
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Data Sources: ESRI Data & Maps, Street Maps 2005

Transverse Mercator, Zone 10 N North, North American Datum 1983
North arrow oriented to grid north

Site and Vicinity Map

Old Bremerton Gas Works Site
Bremerton, Washington

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Figure 1

RESIDENTIAL & COMMERCIAL

FORMER ARCO BULK FUEL FACILITY

SHORELINE

THOMPSON AVENUE

SOUTH McCONKEY INDUSTRIAL PARK PROPERTY (FORMER CONCRETE MANUFACTURING)

SELF-STORAGE

SELF-STORAGE

PISTON RING SHOP

METAL FABRICATION

SELF-STORAGE

SELF-STORAGE

MW-1

MIDDLE McCONKEY PROPERTY

WELDING SHOP

NORTH McCONKEY PROPERTY

MW-7

FORMER ABOVEGROUND STORAGE TANKS

MW-2

FORMER GASWORKS GAS HOLDER COLUMN

MW-3

GRANITE COUNTERTOP WORKSHOP

MW-6

FORMER ASTs

BLUFF DOWN TO SHORELINE

MW-8

MW-5

PARKING LOT

SELF-STORAGE

METAL FABRICATION

FORMER BULK FUEL FACILITY

MW-4

SESKO PROPERTY

FORMER UNDERGROUND FUEL PIPELINE

FORMER UST

PORT WASHINGTON NARROWS

PENNSYLVANIA AVENUE

RESIDENTIAL & COMMERCIAL

SC FUELS BULK FUEL FACILITY (FORMERLY TOSCO)

Legend:

- Site Boundary
- MW-1 ● Monitoring Well Location
- Historic Facilities

Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Reference: Base drawing provided by Parametrix (May 2007) and historic features provided by ECI and Techlaw, untitled and undated.

W S E N

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FEET

Site Plan

McConkey/Sesko Site
Bremerton, Washington

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Figure 2

RESIDENTIAL & COMMERCIAL

FORMER ARCO BULK FUEL FACILITY

SHORELINE

MW-2				
Depth	G	D	O	VOCs
10'	21.9	617	965	B-0.139
40'	ND	ND	ND	ND

MW-3				
Depth	G	D	O	VOCs
5'	645	6,710	2,250	B-1.93 N-465
25'	ND	ND	ND	<A

MW-7				
Depth	G	D	O	VOCs
5'	10.6	17.1	ND	<A
25'	216	30,200	2,900	N-14.7

MW-6				
Depth	G	D	O	VOCs
10'	541	3,770	390	N-2,290 X-16.7
35'	ND	ND	ND	<A

MW-8				
Depth	G	D	O	VOCs
10'	ND	ND	ND	ND
25'	ND	336	138	ND

MW-5				
Depth	G	D	O	VOCs
10'	ND	402	232	<A
20'	ND	ND	ND	B-0.0416

MW-4				
Depth	G	D	O	VOCs
15'	185	2,960	412	N-63.9
30'	635	4,370	<274	N-50.7

MW-1				
Depth	G	D	O	VOCs
5'	ND	ND	ND	ND
35'	ND	ND	ND	<A

THOMPSON AVENUE

SOUTH McCONKEY INDUSTRIAL PARK PROPERTY (FORMER CONCRETE MANUFACTURING)

SELF-STORAGE

SELF-STORAGE

PISTON RING SHOP

METAL FABRICATION

SELF-STORAGE

SELF-STORAGE

WELDING SHOP

NORTH McCONKEY PROPERTY

MW-7

MW-2

MW-3

MW-6

MW-1

GRANITE COUNTERTOP WORKSHOP

BLUFF DOWN TO SHORELINE

MIDDLE McCONKEY PROPERTY

MW-8

MW-5

PARKING LOT

SELF-STORAGE

METAL FABRICATION

MW-4

SESKO PROPERTY

PENNSYLVANIA AVENUE

PORT WASHINGTON NARROWS

RESIDENTIAL & COMMERCIAL

SC FUELS BULK FUEL FACILITY (FORMERLY TOSCO)

Legend:

- Site Boundary
- MW-1 ● Monitoring Well Location
- G = Gasoline Range Hydrocarbons
- D = Diesel Range Hydrocarbons
- O = Oil Range Hydrocarbons
- VOCs = Volatile Organic Compounds
- B = Benzene
- N = Naphthalene
- ND = Not Detected
- <A = Less than MTCA Method A Clean-up Level

The reported concentrations are in mg/kg.

○ Exceeds MTCA Cleanup Level for one or more constituents

Notes:

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N W E S

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FEET

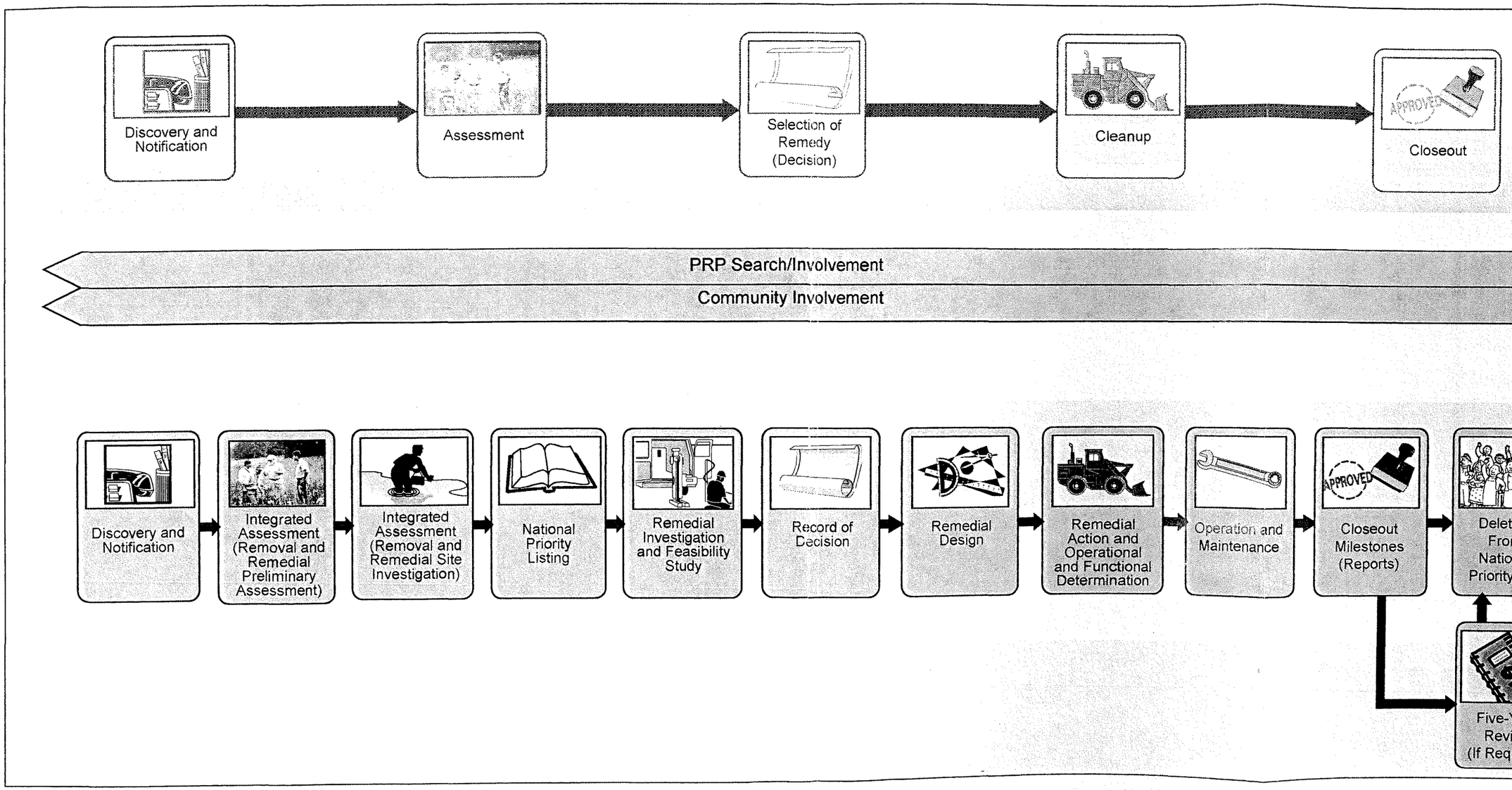
Summary of Petroleum Hydrocarbon and VOC Data for Soil

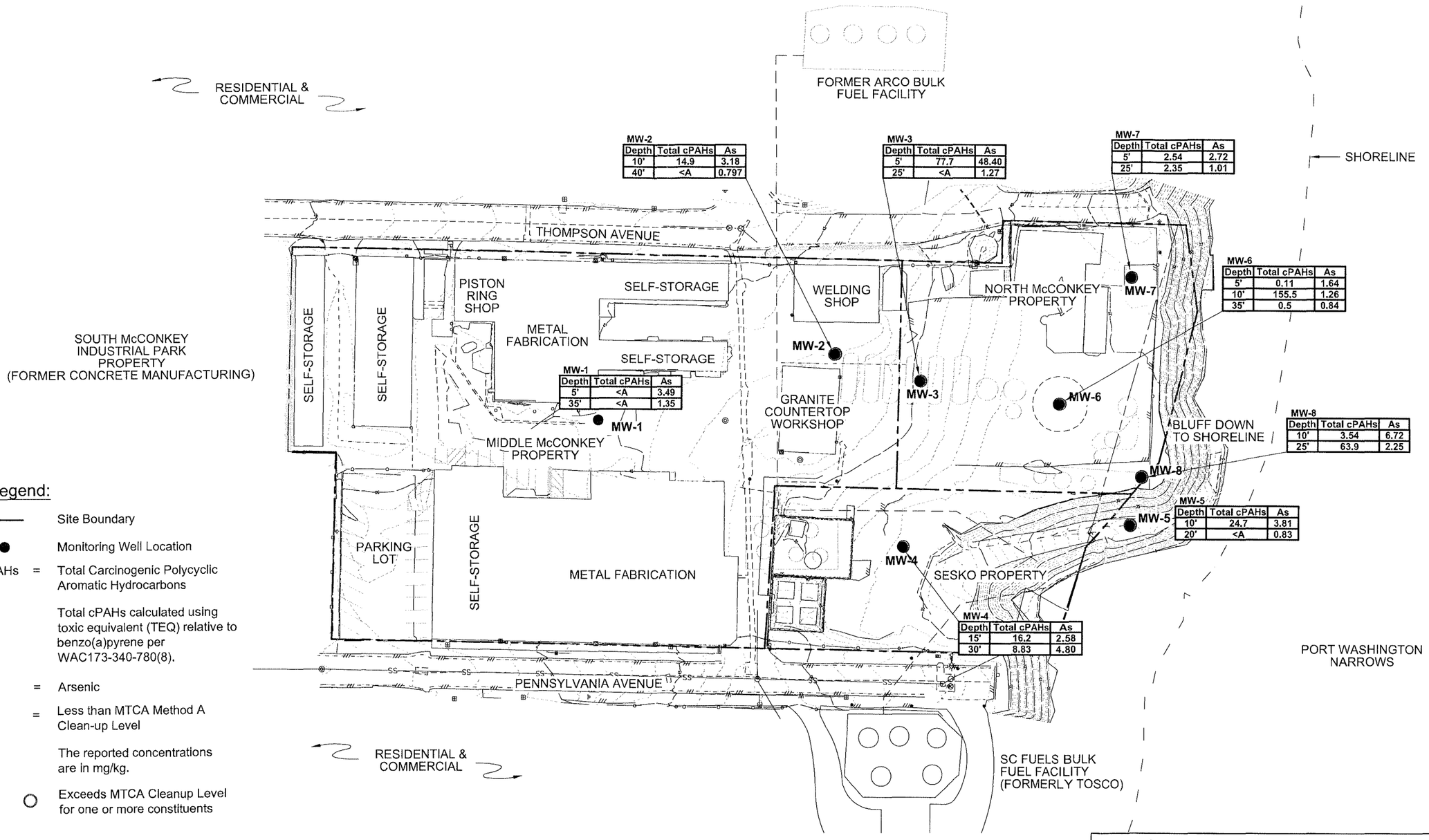
McConkey/Sesko Site
Bremerton, Washington

GeoEngineers

Figure 3

Remedial Process





Legend:

- Site Boundary
- MW-1 ● Monitoring Well Location
- Total cPAHs = Total Carcinogenic Polycyclic Aromatic Hydrocarbons
- Total cPAHs calculated using toxic equivalent (TEQ) relative to benzo(a)pyrene per WAC173-340-780(8).
- As = Arsenic
- <A = Less than MTCA Method A Clean-up Level
- The reported concentrations are in mg/kg.
- ○ Exceeds MTCA Cleanup Level for one or more constituents

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70 0 70
FEET

Summary of cPAH and Arsenic Data for Soil

McConkey/Sesko Site
Bremerton, Washington

GeoEngineers | Figure 4

Dept Health mtg (cont)

Bill Ryan: EPA Project Site Manager

Cascade Natural Gas owned facility last 15-20 years.

#1 concern at outreach meeting: drinking water

Tribe has right to harvest shellfish. Channel has been closed to shellfish harvesting for decades due to CSOs.

Clearly, area inhabited by transients. Are they eating shellfish? Go to the beach?

Rhonda will produce a report.

Andrea: industrial uses going on at site right now.

Jesko property is undeveloped but provides beach access

* Set up mtg w/ Bill Ryan

Mtg Health Dept Staff Gasworks Park

Rhonda/~~Eric~~ Erin

Erin ⇒ funded position to work on behalf of the Federal Govt

Andrea from Shoreline before

ATSDR funds these positions, sister agency to CDC.

Rhonda's/Erin's role is specifically about Public Health

Pennsylvania/Plaza

Agency of Toxic Substances and Disease Registry

2nd report; out for public comment and after EPA data is final - could be 2 years.

3rd report is final report, after 30 day public comment

Each report has a recommendation and action section.

Immediate Health threat; old landfill on Seaco property

Remedial Investigation / Feasibility Study

* Erin; GIS files we have could be useful

* Next steps; meeting w/ Bill
- Also, going to work w/ Crown Hill Elementary

- Sequoia contacts; Rich Brooks and Alison
  - Rich's concern; exposure rates (higher cancer?)
- Rhonda; feel free to call

Erin; 2 sessions at Olympic College. Total of 13 people showed. Posters in the neighborhood better than a newspaper ad

Report is currently under review, might not be out until next year - 6 months

Grant Holcoff from Health Dept was also there.

5100 addresses put together by Erin

New signs going up. To be approved by Grant.

3 reports will be issued
- initial; outlines who may be exposed

Rhonda; should be "No Beach Access" sign
As a superfund site, fences will be put up.
- EPA responsible for community info

Erin / Rhonda willing to come to neighborhood mtgs

10/30/12
Mtg Garrards McConkey/Sesko site

Bill Ryan EPA / Debra EPA
- Currently developing the Community Plan
- Will work w/ Suquamish Tribe
- City got a brownfields grant to do some sampling. Then there was a removal action that caused site to be listed on NPL as a superfund site.
- EPA will negotiate a schedule w/ Cascade
-- 4 years to get to a record of decision
- Issue: our new park project Lillian Walker / Anderson Cove
- Local health district com/will respond
-- health district was going to put up sign?
** Find out about burns on beach

Next steps:
1) EPA into bullets to Faye for Community meeting
2) Cascade should facilitate site mtg after coming to agreement w/ EPA
** Get electronic file for Geoengineers report 26 Oct 2007
* Aug 2004 report: targeted assessment

- Issue: was there an old landfill or City dump at one time there?
- Bill will contact Grant at County Health department to find out about old landfills
- Bill: Geoengineers left barrels?
-

Bremerton Gasworks Superfund Site
Community Interviews for EPA Community Involvement Plan and DOH Public Health Assessment
Sept. 18, 2012

Agency Staff Represented:

U.S. Environmental Protection Agency
Bill Ryan
Debra Sherbina

Washington State Department of Health
Rhonda Kaetzel
Erin Kochaniewicz

Kitsap Public Health District
Grant Holdcroft

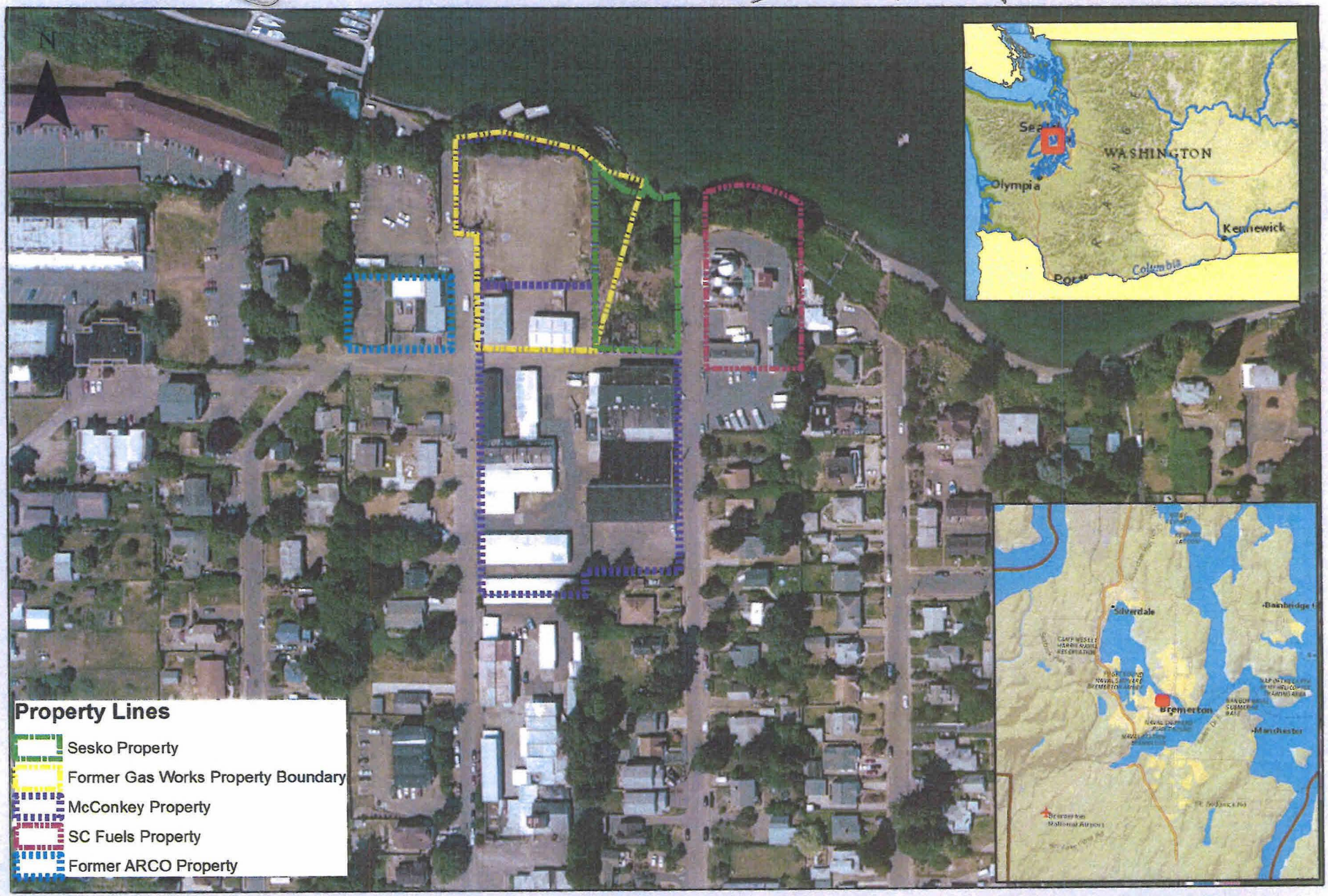
Summary

Objectives
EPA's and DOH's purpose today was twofold: (1) gather information from the community about how they want to be involved and how they would like to receive information about agency activities at the site (2) hear people's concerns about the site and any information they may have about the site. EPA is preparing a Community Involvement Plan for the site and DOH is preparing a preliminary Public Health Assessment.

Attendance
Thirteen people attended in total. Three people attended the afternoon session from 1:00 – 4:00 p.m., and ten people came to the evening session from 6:00 – 9:00 p.m.

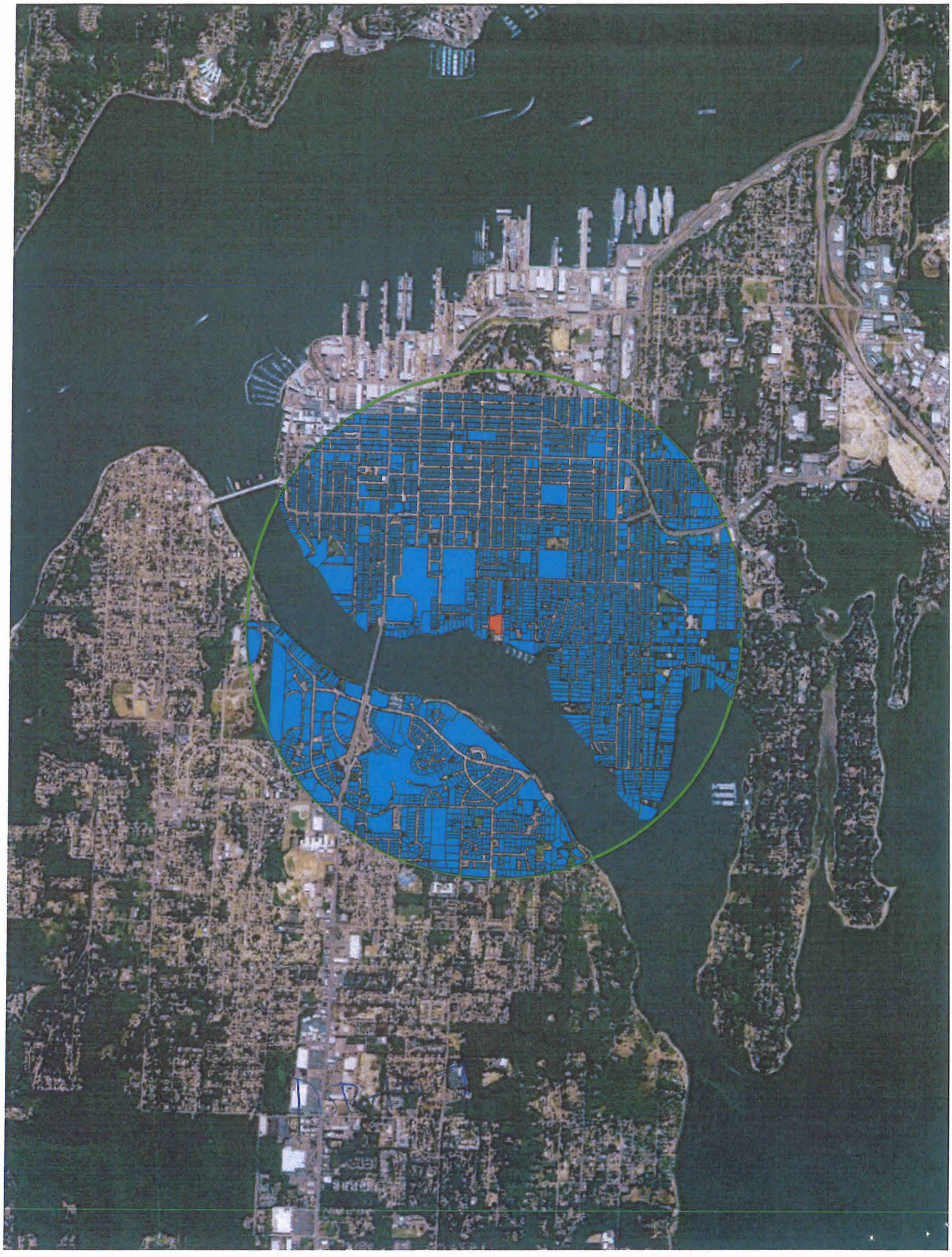
Community Recommendations for Getting Information about Site
- Channel 12 – local
- Mailings to house; fliers distributed to entire neighborhood
- Webpage, email
- Bimonthly neighborhood meeting, possibly at Gage's house
- Postings in neighborhood community centers, on telephone poles
- Newspaper (Kitsap Sun) not generally a good method, some people don't get or read

DRAFT in process



DRAFT

Photo Source: Hart Crowser
Historical Characterization and
Data Gaps
Old Bremerton Gasworks Property Report



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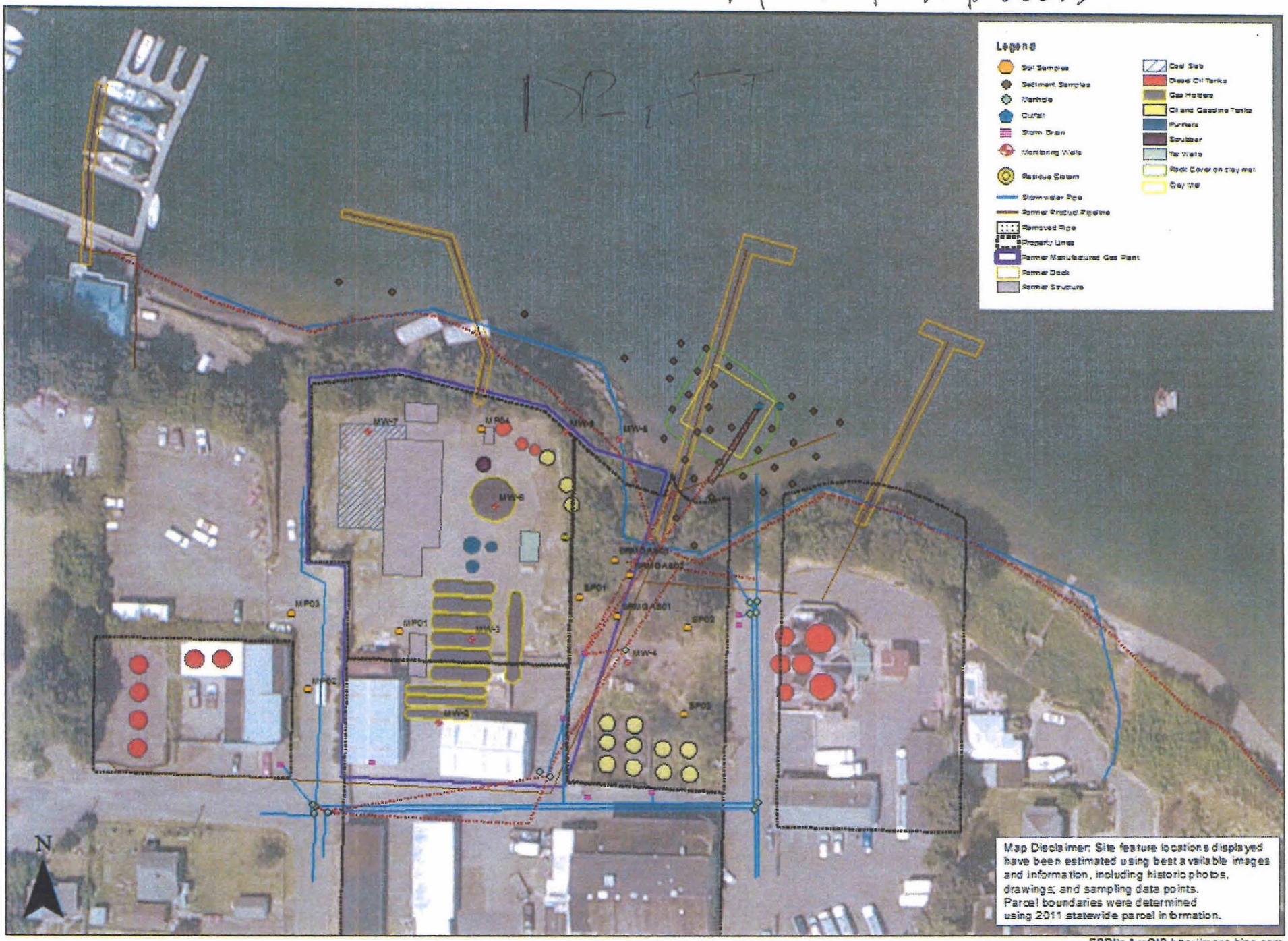


BREMERTON-016472

AGENDA

Department of Health Involvement at Bremerton Gasworks Superfund Site

January 10, 2004
10:00 a.m. – 11:00 a.m.

Meeting called by **Washington State Department of Health/City of Bremerton**

Attendees: Rhonda Kaetzel, Toxicologist, Department of Health
Erin Kochaniewicz, Community Outreach Specialist, Department of Health
Patty Lent, Mayor, City of Bremerton
Faye Flemister, Councilwoman (District 6), City of Bremerton
Jim McDonald, City Council President (District 1), City of Bremerton
Chal Martin, Director, Public Works and Utilities
Andrea Spencer, Director of Community Development

Purpose: To inform city personnel of the Department of Health's role in protecting public health near the Bremerton Gasworks Superfund site.

10:00 – 10:05 a.m.	**Introductions**	
10:05 – 10:15 a.m.	**Department of Health's Involvement with the Site** Work by Department of Health at WA state sites *www.doh.wa.gov/consults* Support for Agencies *Environmental Protection Agency* *Tribes* *State agencies (Departments of Ecology and Natural Resources etc.)* *Local Health* Site Specific Work *Understanding past operating and regulatory activities* *Exposure Evaluation (who, how, what, where, when, how much)* *Evaluating exposures with chemical doses where health effects occur* Report (3 drafts)	Rhonda Kaetzel
10:15 – 10:20 a.m.	**Community Involvement** Working with: *Community members* *Suquamish Tribe* *City* *County* *Liable Parties*	Erin Kochaniewicz
10:20 – 11:00 a.m.	**Questions** **Concerns** **Discussion**	

Public Health Assessment

Washington State Department of Health

Introduction

The Agency for Toxic Substances and Disease Registry (a federal public health agency) and the Washington State Department of Health have entered into a cooperative agreement to form a team of specialists that conduct Public Health Assessments in Washington State. This team works through the Department of Health in order to study possible public health problems caused by hazardous chemicals at contaminated sites.

What is a Public Health Assessment?

A Public Health Assessment (PHA) gathers information about hazardous substances at a site and evaluates whether exposure to those substances might cause harm to people. The PHA considers how chemicals at a site may affect public health in the past, now, or in the future. It provides advice on chemicals found in a community that can harm your health.

During the Public Health Assessment

During a Public Health Assessment, we look at information available to determine if exposure to chemicals could have an effect on human health. An assessment tries to answer these questions.

- What chemicals have been released to the environment?
- What are the levels of chemicals found in the environment at or near the site?
- How might people come into contact with the chemicals (exposure pathways)?
- How might those chemicals affect people's health?
- Does living or working near the site mean people may get sick?
- What actions need to be taken to protect public health?

Sources of Information

The information needed to do a Public Health Assessment is usually already available from other sources. These sources include:

- County and local health agencies
- Environmental protection agencies such as the U.S. Environmental Protection Agency (EPA) and Washington State Department of Ecology.
- U.S. Fish and Wildlife Service or State Fish and Game.
- Community groups.
- Environmental or advocacy groups.

The Department of Health collects information, but does not perform sampling.

The Public Health Assessment Report

A Public Health Assessment includes:

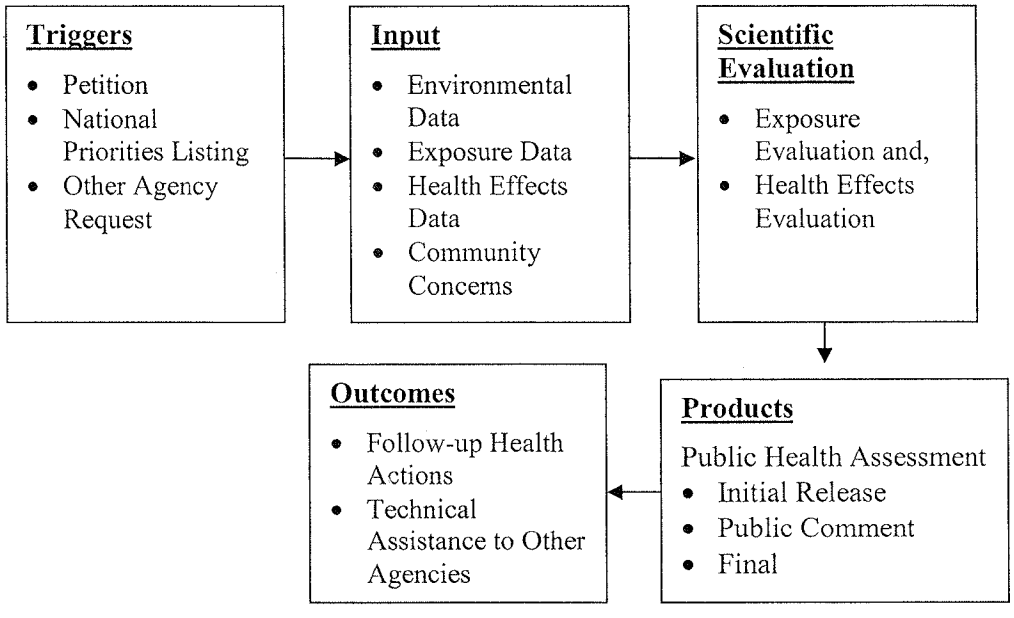
- A description of what occurred at the site and how it became contaminated,
- Possible ways people may come in contact with chemicals,
- Conclusions about the chemicals studied that could be harmful to your health,
- Recommendations for actions about further sampling needed, or ways to reduce exposures.

The Public Health Assessment Report

The process can produce up to three reports.

1) An **Initial Release** report determines immediate health concerns and assists agencies in characterizing a site.
2) After adequate data is available, a report for **Public Comment** provides an opportunity for the community, stakeholders, and agencies to give feedback on our conclusions or questions that were not answered; and
3) The **Final Report** will be available in a local library and on the internet. A Public Health Assessment may lead to other activities, such as additional smaller evaluations called Health Consultations.

Basic components of a Public Health Assessment Process



Protecting Communities

ATSDR makes recommendations to communities, such as:

- Things you can do to **reduce** the ways you come in contact with chemicals.
- Actions you can take to **learn more** about the area that has chemical waste.

ATSDR and the Department of Health will involve the community by providing information about chemicals found and any other activities that the community would need to improve communication.

ATSDR and DOH are Advisory Agencies

ATSDR and the Department of Health provide *recommendations* to EPA, businesses, industry, to state and local environmental and health agencies, and communities. Our recommendations are directly related to the health of the community. We can not legally enforce our recommendations.

How You Can Talk to Us

We want to know your concerns and answer your questions. If you have any questions or would like more information, please contact:

Agency for Toxic Substances and Disease Registry (ATSDR)
1-800-CDC-INFO
(1-800-232-4636)
Washington State Department of Health
Toll Free 1-877-485-7316

Site Assessment Program

July, 2012

Washington State Department of Health

Protecting people from exposures to environmental contaminants is a public health goal. Contaminants can be released from hazardous waste sites and other sources. They impact the places where people live, work, or play creating potential health hazards. The Washington State Department of Health Site Assessments Program conducts health consultations to assess the health threat posed by environmental contaminants and performs community education and outreach to inform Washington residents about potential exposures.

Health Consultations

The Site Assessment Program works on Puget Sound and non-Puget Sound sites. Our work helps determine whether contaminants create potential health hazards for the people who live and recreate around Washington State.

We work with local, state, and federal agencies, and tribal governments to make sure the necessary information about the contamination and potential exposures at a site is collected. The Site Assessment Program uses this information to conduct health consultations, which include:

- Evaluating the levels of contaminants released into the environment from past or current practices.
- Identifying the potential health hazards resulting from exposure to contaminants.
- Recommending actions that agencies and the public can take to reduce or eliminate exposures to contaminants.

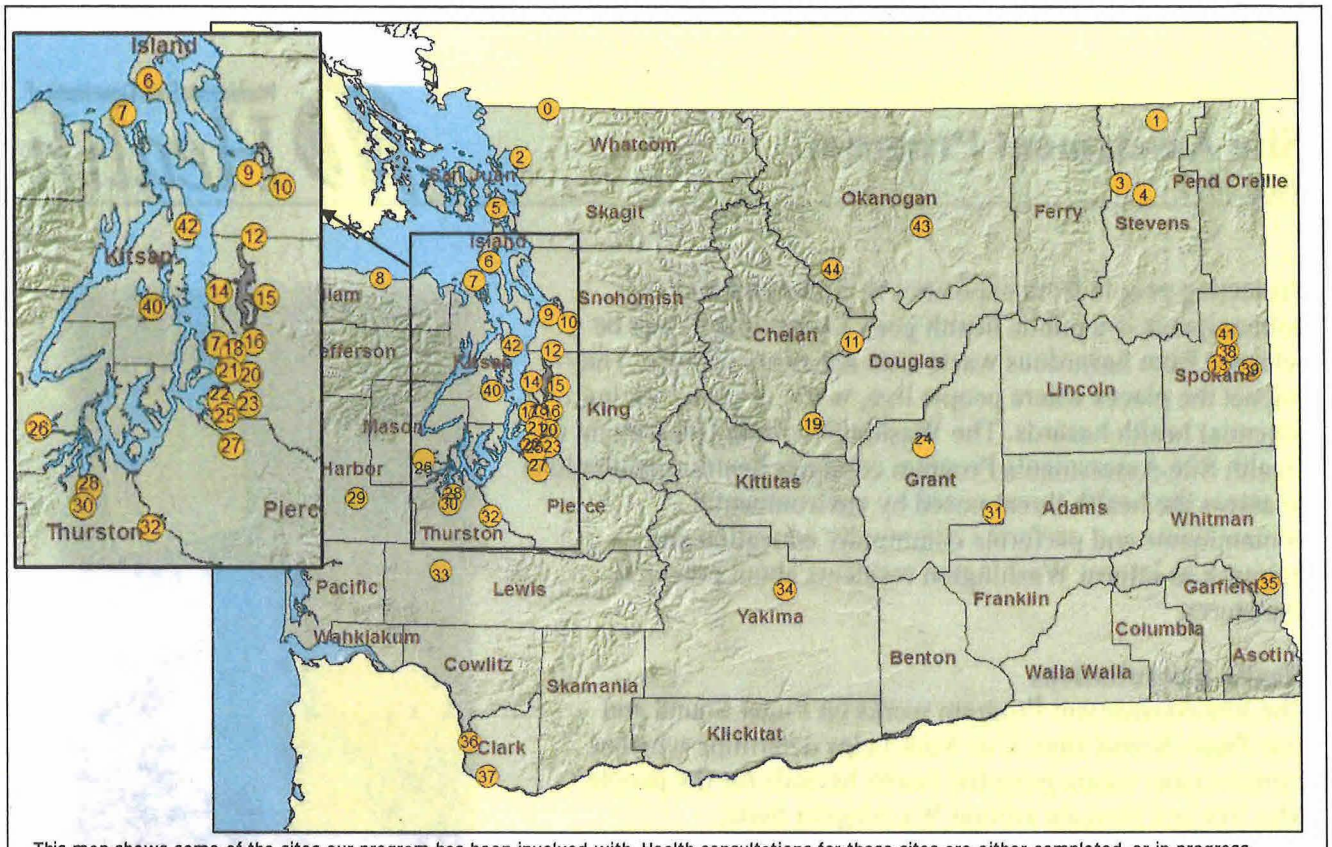
We work, and are funded, under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). ATSDR is part of the U.S. Department of Health and Human Services and is the principal federal public health agency responsible for health issues related to hazardous waste sites.

Community Outreach and Education

Through outreach and education activities, we inform communities about potential environmental health hazards in their area. We develop materials that summarize the health consultation findings, which include information about:

- Specific contaminants.
- How community members could be exposed.
- Steps people can take to minimize exposures.

We share information with communities through a variety of ways, including public meetings, fact sheets, advisories, press releases, and one-on-one conversations.



This map shows some of the sites our program has been involved with. Health consultations for these sites are either completed, or in progress. Copies of completed health consultations are available online at: http://www.doh.wa.gov/ehp/oehas/consults.htm

1. LeRoi Smelter
2. Little Squalicum Park
3. Lake Roosevelt
4. Van Stone Mine
5. Fidalgo Bay
6. Holmes Harbor
7. Port Townsend Paper Corp.
8. Rayonier Mill
9. Port Gardner
10. Yttri/Wozow
11. Manson Elementary
12. Kenmore Industrial Park
13. Euclid Road
14. Elliot Bay
15. Newcastle Park Beach
16. Rainier Commons
17. Lower Duwamish Waterway
18. Master Park
19. Lincoln Elementary
20. Dallas Avenue
21. Federal Way/Des Moines Beach Sediment
22. Phillips Services Corp.
23. Boeing Auburn Plant
24. Ephrata Landfill
25. Phillips Residential Property
26. Oakland Bay
27. Home Heating Oil
28. Budd Inlet
29. City of Montesano
30. Palermo
31. City of Warden
32. Morris Road
33. Hamilton/Labree Roads
34. Buckle My Shoe Early Learning Center
35. Evaluation of Soil Contamination, Eastern/Central WA Schools
36. Park Laundry
37. Milton's Dry Cleaner
38. Spokane River
39. Progress Elementary
40. Wyckoff/Eagle Harbor
41. Heglar Kronquist
42. Kingston Nike
43. Evaluation of Soil Contamination Eastern/Central WA Schools
44. Antimony Mine

Program Highlights

Puget Sound Sites

Our work on Puget Sound sites contributes to the Governor's initiative of restoring the Sound to a healthy condition by 2020. Some of our activities include:

- Protecting human health by evaluating marine tissue data and updating the fish consumption advisories for the Lower Duwamish Waterway.
- Evaluating organic and inorganic contaminants in geoduck tissue from the Wyckoff/Eagle Harbor Superfund site to help the process used for certifying shellfish growing areas.
- Determining whether contaminants at Federal Way and Des Moines beach sites create a health hazard for people who wade, picnic, or use the beaches for other recreational activities.

Non-Puget Sound Sites

- Issuing fish consumption advisories in the Spokane River and Upper Columbia River (Lake Roosevelt) to protect residents from exposure to contaminants.
- Facilitating the installation of vapor mitigation systems to protect residents in Vancouver from indoor air pollutants.
- Protecting communities by making recommendations that led to the removal of contaminated soil from schoolyards and residential areas throughout the state.

AGENDA

Department of Health Involvement at Bremerton Gasworks Superfund Site

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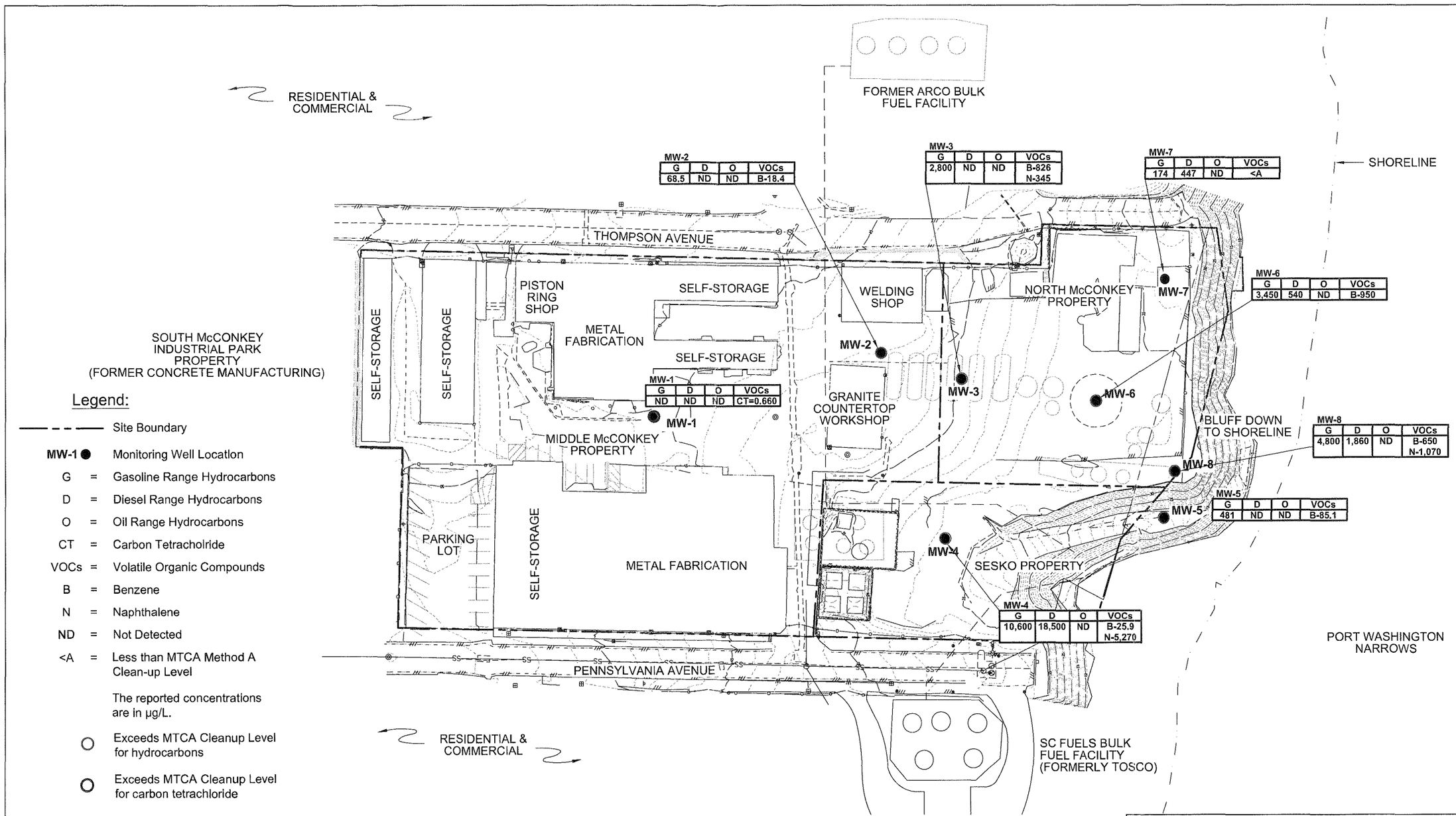

Legend:

- Site Boundary
- MW-1 ● Monitoring Well Location
- G = Gasoline Range Hydrocarbons
- D = Diesel Range Hydrocarbons
- O = Oil Range Hydrocarbons
- CT = Carbon Tetracholride
- VOCs = Volatile Organic Compounds
- B = Benzene
- N = Naphthalene
- ND = Not Detected
- <A = Less than MTCA Method A Clean-up Level

The reported concentrations are in µg/L.

- ○ Exceeds MTCA Cleanup Level for hydrocarbons
- ○ Exceeds MTCA Cleanup Level for carbon tetrachloride

Notes:

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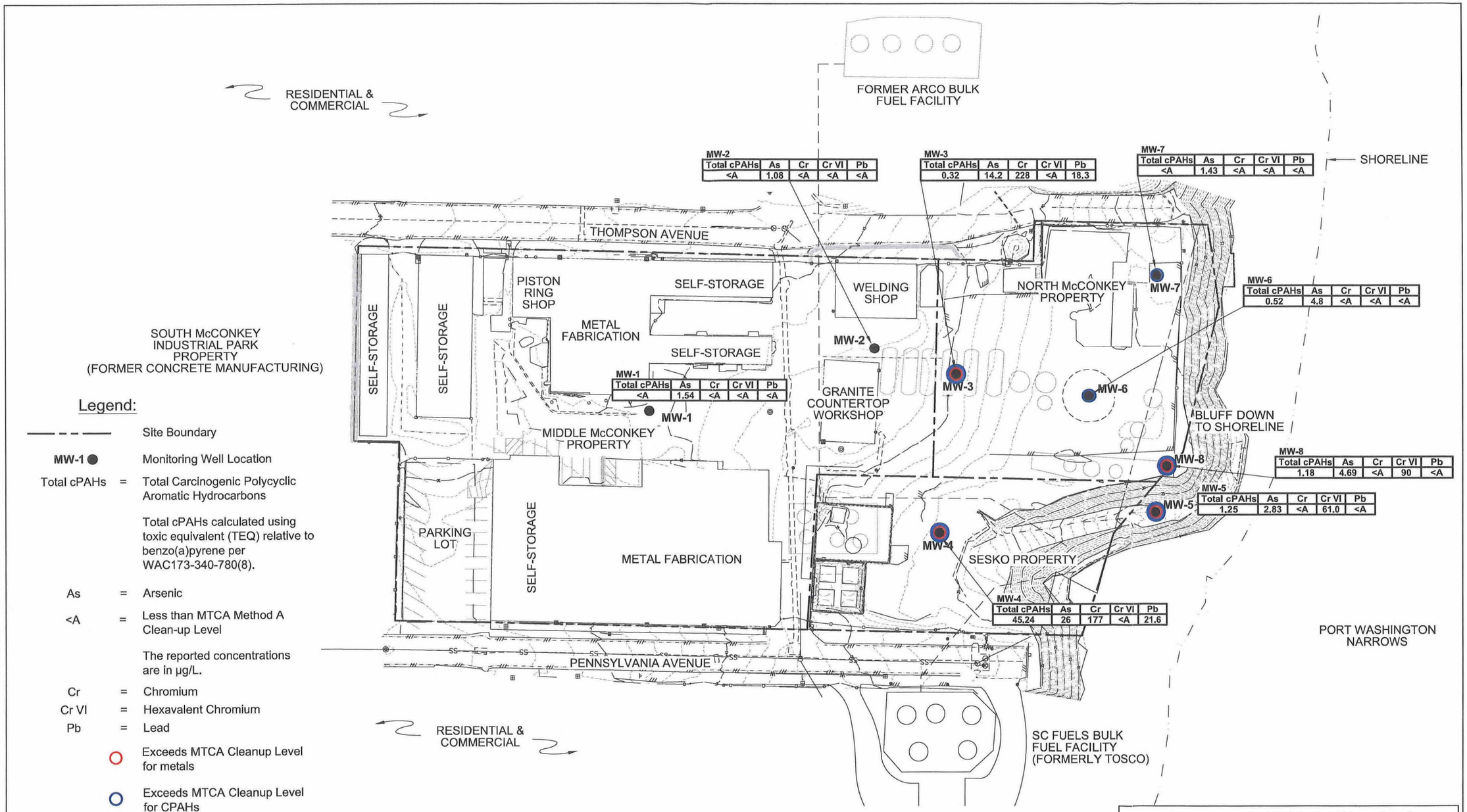
FEET

Summary of Petroleum Hydrocarbon and VOC Data for Groundwater

McConkey/Sesko Site
Bremerton, Washington

GeoEngineers

Figure 5



Legend:

- Site Boundary
- MW-1 ● Monitoring Well Location
- Total cPAHs = Total Carcinogenic Polycyclic Aromatic Hydrocarbons
- Total cPAHs calculated using toxic equivalent (TEQ) relative to benzo(a)pyrene per WAC173-340-780(8).
- As = Arsenic
- <A = Less than MTCA Method A Clean-up Level
- The reported concentrations are in µg/L.
- Cr = Chromium
- Cr VI = Hexavalent Chromium
- Pb = Lead
- ○ Exceeds MTCA Cleanup Level for metals
- ○ Exceeds MTCA Cleanup Level for CPAHs

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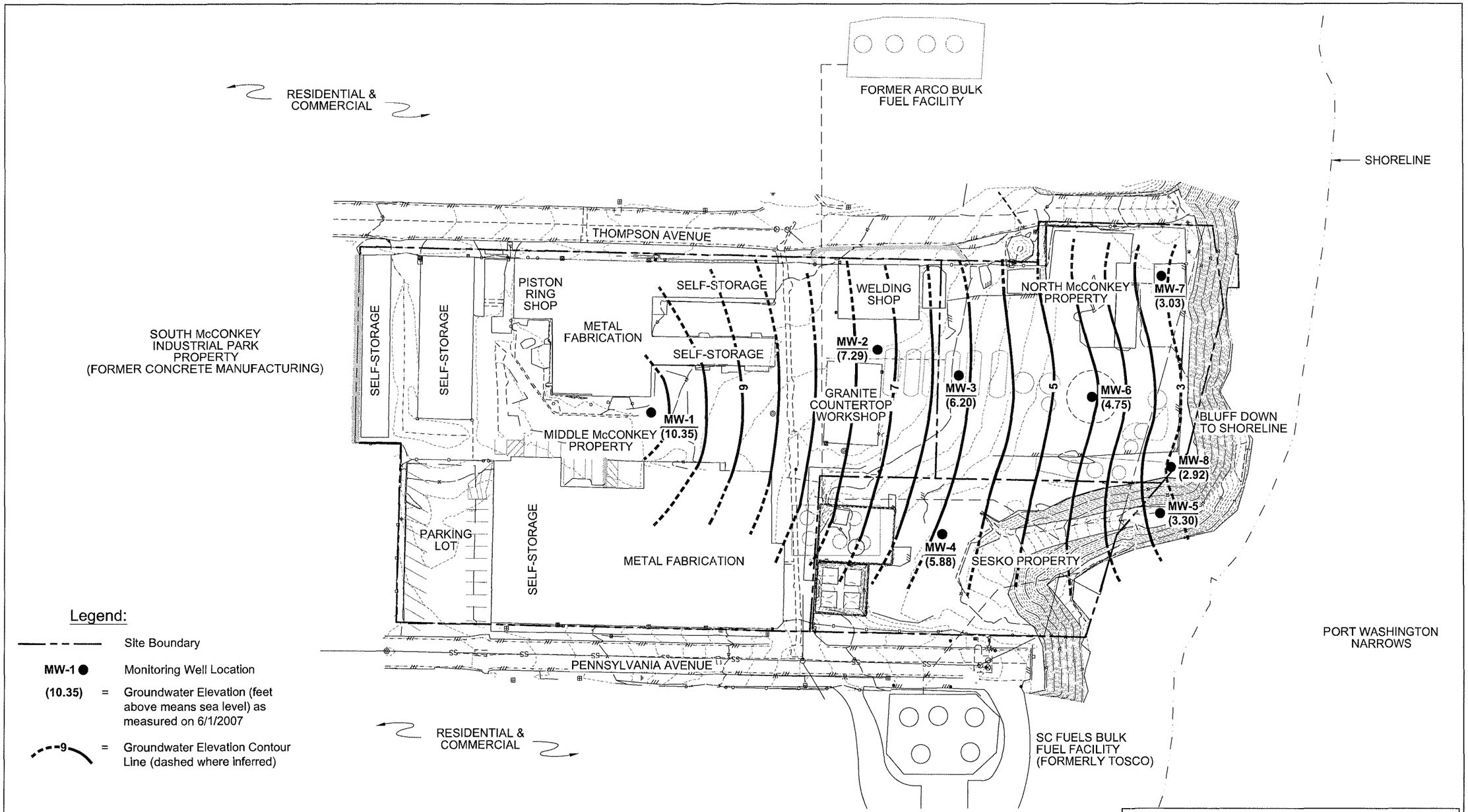
FEET

Summary of cPAH and Dissolved Metals Data for Groundwater

McConkey/Sesko Site
Bremerton, Washington

GeoEngineers

Figure 6



Legend:

- Site Boundary
- MW-1 ● Monitoring Well Location
- (10.35) = Groundwater Elevation (feet above means sea level) as measured on 6/1/2007
- 9 = Groundwater Elevation Contour Line (dashed where inferred)

Notes:

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70 0 70
FEET

Groundwater Elevation Map (June 1, 2007)

McConkey/Sesko Site
Bremerton, Washington

GeoEngineers | Figure 7

GeoEngineers

APPENDIX A
FIELD PROCEDURES

APPENDIX A
FIELD PROCEDURES

GENERAL

Subsurface conditions at the Site were explored by completing eight soil borings and constructing groundwater monitoring wells in these borings using hollow-stem auger drilling equipment. Drilling services were provided by Cascade Drilling, Inc. of Bothell, Washington. A representative from our staff selected the exploration locations, examined and classified the soils encountered, and prepared a detailed log of each exploration. Soils encountered were visually classified in general accordance with ASTM D-2488-94, which is described in Figure A-1. The boring logs are presented in Figures A-2 through A-9. At the request of the State of Washington Department of Archaeology and Historic Preservation, a professional archaeologist from the Army Corps of Engineers was present at the site during the drilling and soil sampling activities. The archaeologist examined the soil cuttings as they were generated during the soil boring operations to evaluate the presence of potential cultural resources at the Site. Based on the archaeological soil screening, no cultural resources were identified.

Drilling and Soil Sampling

The soil borings were completed to depths ranging from approximately 20 to 45 feet bgs. The sampling equipment was decontaminated before each sampling attempt with a Liqui-Nox® solution wash and a distilled water rinse. Soil samples were obtained at 5-foot depth intervals for field screening.

Soil samples obtained from the borings were collected from the sampler with a stainless steel knife or new gloves. The sampler was driven a maximum of 48 inches using a pneumatic hammer. A portion of each sample was placed in a laboratory-prepared sample jar for potential chemical analysis. The sample containers were completely filled to minimize headspace. The remaining portion of each sample was used for field screening. The sampling equipment was decontaminated prior to each use with a Liqui-Nox® soap solution, a tap water initial rinse and a distilled water final rinse.

At least two samples from each boring were selected for chemical analysis based on field screening results and/or the sample location relative to potential sources of contamination. The soil samples were placed in a cooler with ice for transport to the laboratory. Standard chain-of-custody procedures were followed in transporting the soil samples to the laboratory.

FIELD SCREENING OF SOIL SAMPLES

Soil samples obtained from the borings were screened in the field for evidence of contamination using (1) visual examination; (2) sheen screening; and (3) headspace vapor screening with a photo-ionization detector (PID). The results of headspace and sheen screening are included in the boring logs and in Table 1 for soil samples tested by chemical analysis.

Visual screening consists of inspecting the soil for stains indicative of petroleum-related contamination. Visual screening is generally more effective when contamination is related to heavy petroleum hydrocarbons, such as motor oil or hydraulic oil, or when hydrocarbon concentrations are high. Sheen screening and headspace vapor screening are more sensitive methods that have been effective in detecting contamination at concentrations less than regulatory cleanup guidelines.

Sheen screening involves placing soil in a pan of water and observing the water surface for signs of sheen. Sheen classifications are as follows:

No Sheen (NS)	No visible sheen on water surface.
Slight Sheen (SS)	Light, colorless, dull sheen; spread is irregular, not rapid; sheen dissipates rapidly.
Moderate Sheen (MS)	Light to heavy sheen, may have some color/iridescence; spread is irregular to flowing; few remaining areas of no sheen on water surface.
Heavy Sheen (HS)	Heavy sheen with color/iridescence; spread is rapid; entire water surface may be covered with sheen.

Headspace vapor screening involves placing a soil sample in a plastic sample bag. Air is captured in the bag and the bag is shaken to expose the soil to the air trapped in the bag. The probe of a PID is inserted in the bag and the instrument measures the concentration of combustible vapor in the air removed from the sample headspace. The PID measures concentrations in ppm but is calibrated with to isobutylene. The PID is designed to quantify combustible gas and organic vapor concentrations in the range between 100 2,500 ppm. Field screening results are site-specific and vary with soil type, soil moisture content, temperature and type of contaminant.

GROUNDWATER SAMPLE COLLECTION

Groundwater samples were obtained from monitoring wells MW-1 through MW-8 using low-flow groundwater sampling methods. New downhole polyethylene tubing and a peristaltic pump were used to obtain the water samples. Prior to sample collection, each monitoring well was purged until consistent values (i.e., less than 10% variance between consecutive readings) were obtained for pH, temperature, dissolved oxygen, and conductivity. The water samples were transferred to clean laboratory-prepared containers provided by the analytical laboratory. Laboratory prepared bottles were completely filled to eliminate headspace and were kept cool during transport to the testing laboratory. Chain-of-custody procedures were observed during transport of the samples to the testing laboratory.

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
MORE THAN 50% RETAINED ON NO. 200 SIEVE	SAND AND SANDY SOILS	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS
				SP	POORLY-GRADED SANDS, GRAVELLY SAND
	MORE THAN 50% OF COARSE FRACTION PASSING NO. 4 SIEVE	SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS, ROCK FLOUR, CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
MORE THAN 50% PASSING NO. 200 SIEVE	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS AND SILTS OF MEDIUM TO HIGH PLASTICITY
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: Multiple symbols are used to indicate borderline or dual soil classifications

ADDITIONAL MATERIAL SYMBOLS

SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
	CC	Cement Concrete
	AC	Asphalt Concrete
	CR	Crushed Rock/ Quarry Spalls
	TS	Topsoil/ Forest Duff/Sod

- Measured groundwater level in exploration, well, or piezometer
- Groundwater observed at time of exploration
- Perched water observed at time of exploration
- Measured free product in well or piezometer

Stratigraphic Contact

- Distinct contact between soil strata or geologic units
- Gradual change between soil strata or geologic units
- Approximate location of soil strata change within a geologic soil unit

Sampler Symbol Descriptions

- 2.4-inch I.D. split barrel
- Standard Penetration Test (SPT)
- Shelby tube
- Piston
- Direct-Push
- Bulk or grab

Blowcount is recorded for driven samplers as the number of blows required to advance sampler 12 inches (or distance noted). See exploration log for hammer weight and drop.

A "P" indicates sampler pushed using the weight of the drill rig.

Laboratory / Field Tests

%F	Percent fines
AL	Atterberg limits
CA	Chemical analysis
CP	Laboratory compaction test
CS	Consolidation test
DS	Direct shear
HA	Hydrometer analysis
MC	Moisture content
MD	Moisture content and dry density
OC	Organic content
PM	Permeability or hydraulic conductivity
PP	Pocket penetrometer
SA	Sieve analysis
TX	Triaxial compression
UC	Unconfined compression
VS	Vane shear

Sheen Classification

NS	No Visible Sheen
SS	Slight Sheen
MS	Moderate Sheen
HS	Heavy Sheen
NT	Not Tested

NOTE: The reader must refer to the discussion in the report text and the logs of explorations for a proper understanding of subsurface conditions. Descriptions on the logs apply only at the specific exploration locations and at the time the explorations were made; they are not warranted to be representative of subsurface conditions at other locations or times.

KEY TO EXPLORATION LOGS

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FIGURE A-1

Date(s) Drilled	05/21/07	Logged By	MSL	Checked By	MSL
Drilling Contractor	Cascade Drilling	Drilling Method	HSA	Sampling Methods	Dames & Moore
Auger Data	4¼-inch ID	Hammer Data	300 lb hammer/30 in drop	Drilling Equipment	CME 75
Total Depth (ft)	46.5	Surface Elevation (ft)	45.03	Groundwater Elevation (ft)	7.03
Vertical Datum		Datum/ System	NAVD88	Easting(x): Northing(y):	

Elevation feet	Depth feet	SAMPLES: Interval	Recovered (in)	Blows/foot	Sub-Sample Number	Testing	Water Level	Graphic Log	Group Symbol	MATERIAL DESCRIPTION	Sheen	Headspace Vapor PID (ppb)	NOTES
45	0								AS	Asphalt			
									ML	Brown silt with fine sand and fine gravel (loose, wet) (fill)			
40	5		18	30	1	CA			ML	Brown silt with fine sand (very stiff, moist) (fill)	NS	0.0	
35	10		18	48	2				SM	Brown silty fine to medium sand (very dense, moist)	NS	42.9	
30	15		18	65	3						NS	17.3	
25	20		18	44	4				SM	Brown silty fine to medium sand (very dense, moist)	NS-SS	26.0	
20	25		18	72	5				SP-SM	Brown fine to medium sand with silt (very dense, moist)	NS	42.3	
	30												

Note: See Figure A-1 for explanation of symbols.

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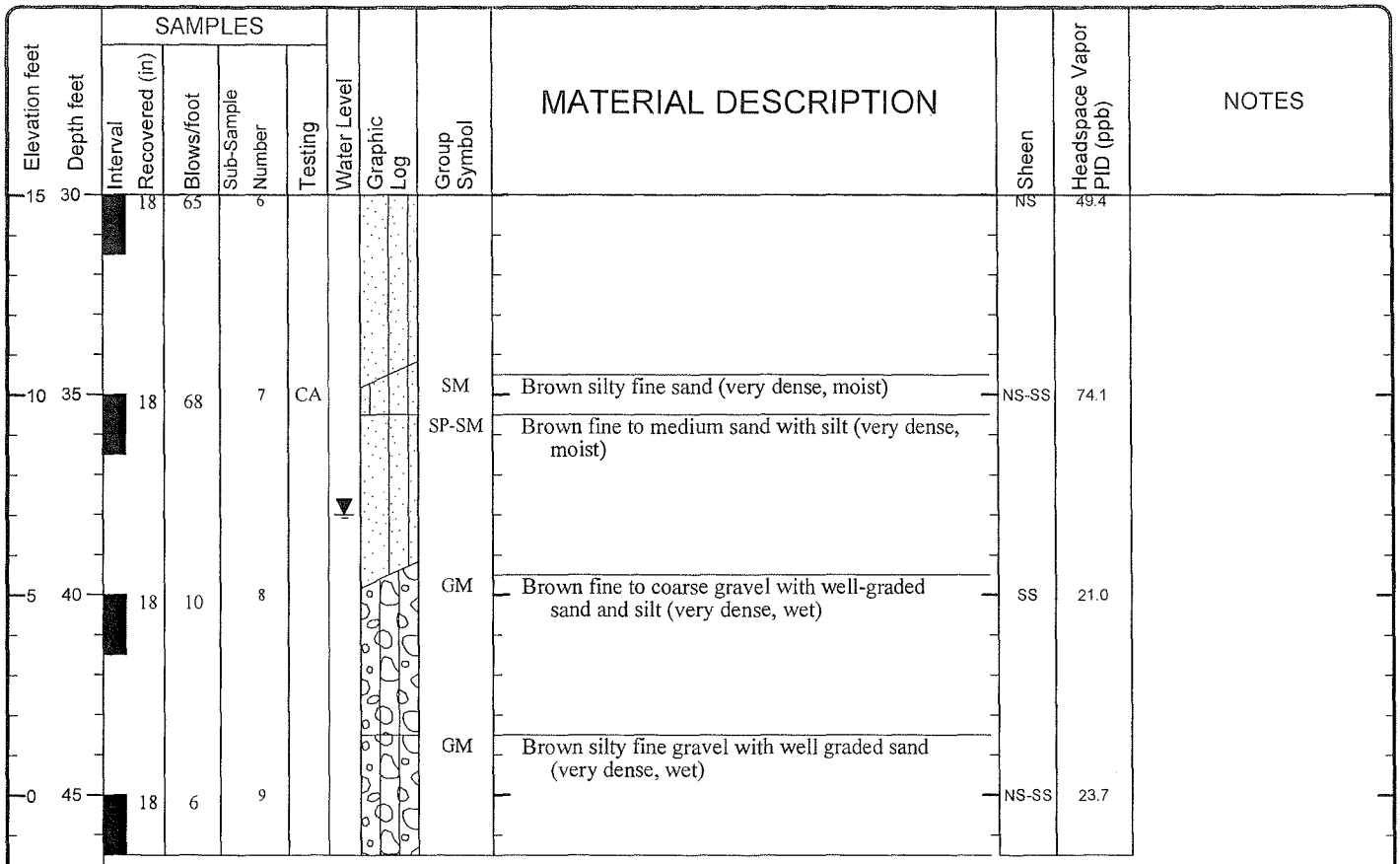
LOG OF MONITORING WELL MW-1

GeoEngineers

Project: McConkey/Sesko
Project Location: Bremerton, Washington
Project Number: 0892-017-00

Figure A-2
Sheet 1 of 2



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LOG OF MONITORING WELL MW-1 (continued)

GeoEngineers

Project: McConkey/Sesko
Project Location: Bremerton, Washington
Project Number: 0892-017-00

Figure A-2
Sheet 2 of 2

Date(s) Drilled	05/21/07	Logged By	MSL	Checked By	MSL
Drilling Contractor	Cascade Drilling	Drilling Method	HSA	Sampling Methods	Dames & Moore
Auger Data	4¼-inch ID	Hammer Data	300 lb hammer/30 in drop	Drilling Equipment	CME 75
Total Depth (ft)	46.5	Surface Elevation (ft)	42.54	Groundwater Elevation (ft)	4.54
Vertical Datum		Datum/ System	NAVD88	Easting(x): Northing(y):	

Elevation feet	Depth feet	SAMPLES: Interval	Recovered (in)	Blows/foot	Sub-Sample Number	Testing	Water Level	Graphic Log	Group Symbol	MATERIAL DESCRIPTION	Sheen	Headspace Vapor PID (ppb)	NOTES
	0								AS	Asphalt			
									ML	Gray to brown silt with fine sand and trace gravel (stiff, moist) (fill)			
40													
	5		18	13	1	CA					SS	81.8	Creosote-like odor
35									SM	Brown silty fine to medium sand (medium dense, moist) (fill)			
	10		18	15	2						MS	13.6	Black staining; creosote-like odor
									SM	Light brown silty fine sand with trace coarse gravel (medium dense, moist) (fill)			
30													
									SM	Brown silty fine to medium sand (dense, moist)			
	15		18	45	3						NS-SS	9.1	
25													
	20		18	52	4					Becomes very dense	NS	19.4	
20													
	25		18	65	5	CA					NS	18.3	
15													
	30								GM	Brown well-graded silty gravel with sand (very dense, moist)			

Note: See Figure A-1 for explanation of symbols.

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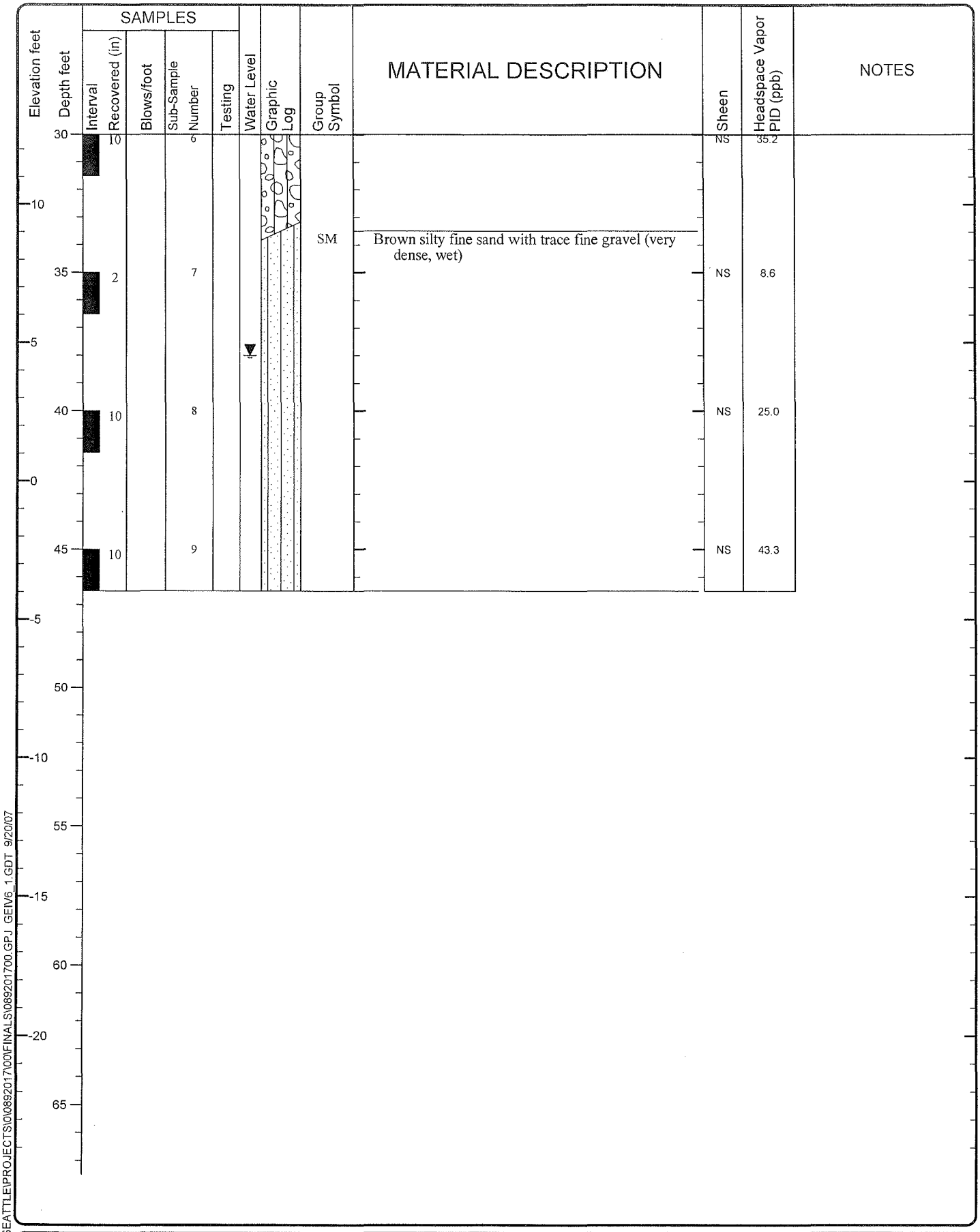
LOG OF MONITORING WELL MW-2

GeoEngineers

Project: McConkey/Sesko
Project Location: Bremerton, Washington
Project Number: 0892-017-00

Figure A-3
Sheet 1 of 2



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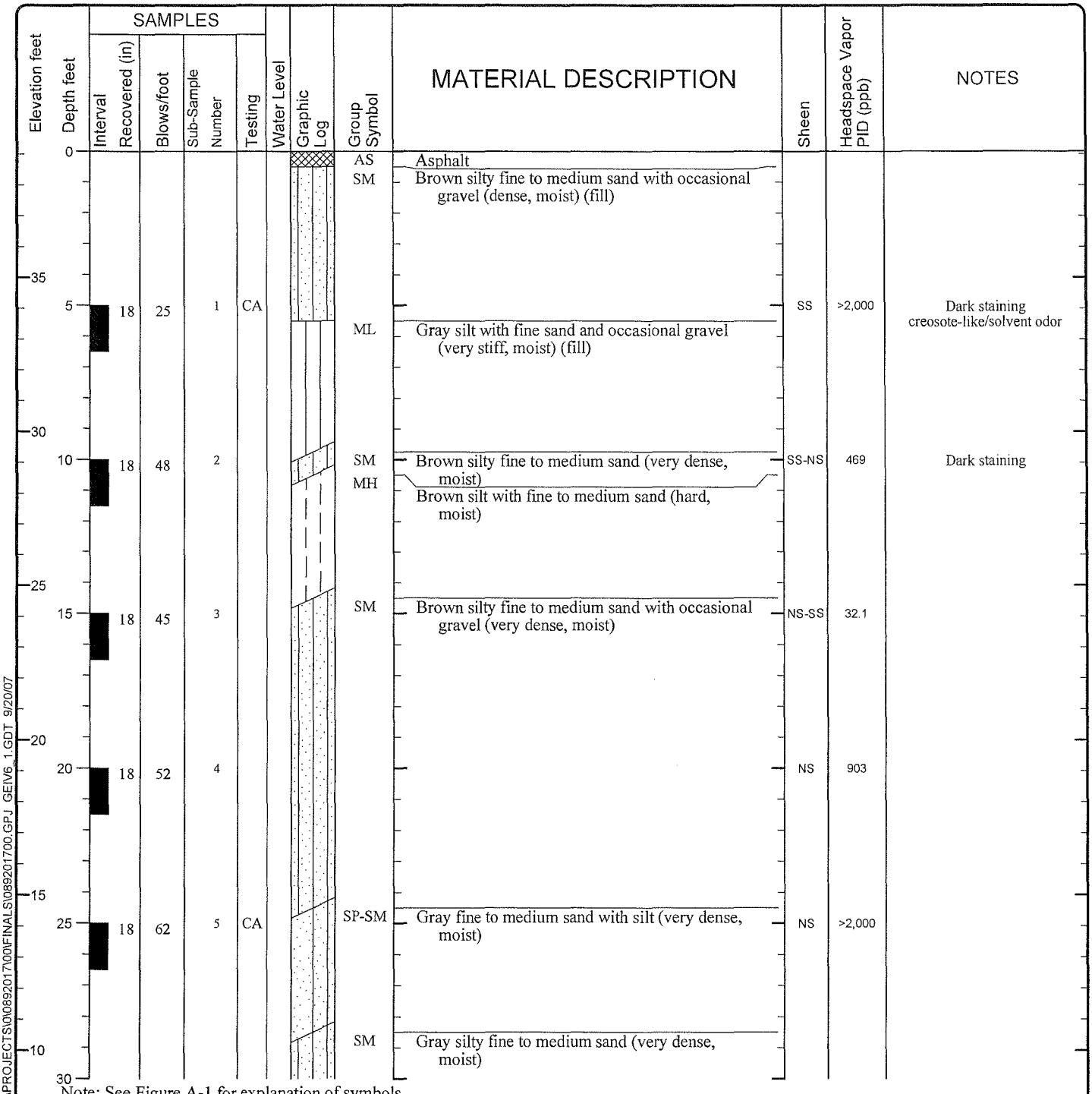
LOG OF MONITORING WELL MW-2 (continued)

GeoEngineers

Project: McConkey/Sesko
Project Location: Bremerton, Washington
Project Number: 0892-017-00

Figure A-3
Sheet 2 of 2

Date(s) Drilled	05/22/07	Logged By	MSL	Checked By	MSL
Drilling Contractor	Cascade Drilling	Drilling Method	HSA	Sampling Methods	Dames & Moore
Auger Data	4¼-inch ID	Hammer Data	300 lb hammer/30 in drop	Drilling Equipment	CME 75
Total Depth (ft)	46.5	Surface Elevation (ft)	39.10	Groundwater Elevation (ft)	4.1
Vertical Datum		Datum/ System	NAVD88	Easting(x): Northing(y):	



Elevation feet	Depth feet	SAMPLES Interval	Recovered (in)	Blows/foot	Sub-Sample Number	Testing	Water Level	Graphic Log	Group Symbol	MATERIAL DESCRIPTION	Sheen	Headspace Vapor PID (ppb)	NOTES
	0								AS	Asphalt			
									SM	Brown silty fine to medium sand with occasional gravel (dense, moist) (fill)			
35	5		18	25	1	CA					SS	>2,000	Dark staining creosote-like/solvent odor
									ML	Gray silt with fine sand and occasional gravel (very stiff, moist) (fill)			
30	10		18	48	2				SM	Brown silty fine to medium sand (very dense, moist)	SS-NS	469	Dark staining
									MH	Brown silt with fine to medium sand (hard, moist)			
25	15		18	45	3				SM	Brown silty fine to medium sand with occasional gravel (very dense, moist)	NS-SS	32.1	
20	20		18	52	4						NS	903	
15	25		18	62	5	CA			SP-SM	Gray fine to medium sand with silt (very dense, moist)	NS	>2,000	
10	30								SM	Gray silty fine to medium sand (very dense, moist)			

Note: See Figure A-1 for explanation of symbols.

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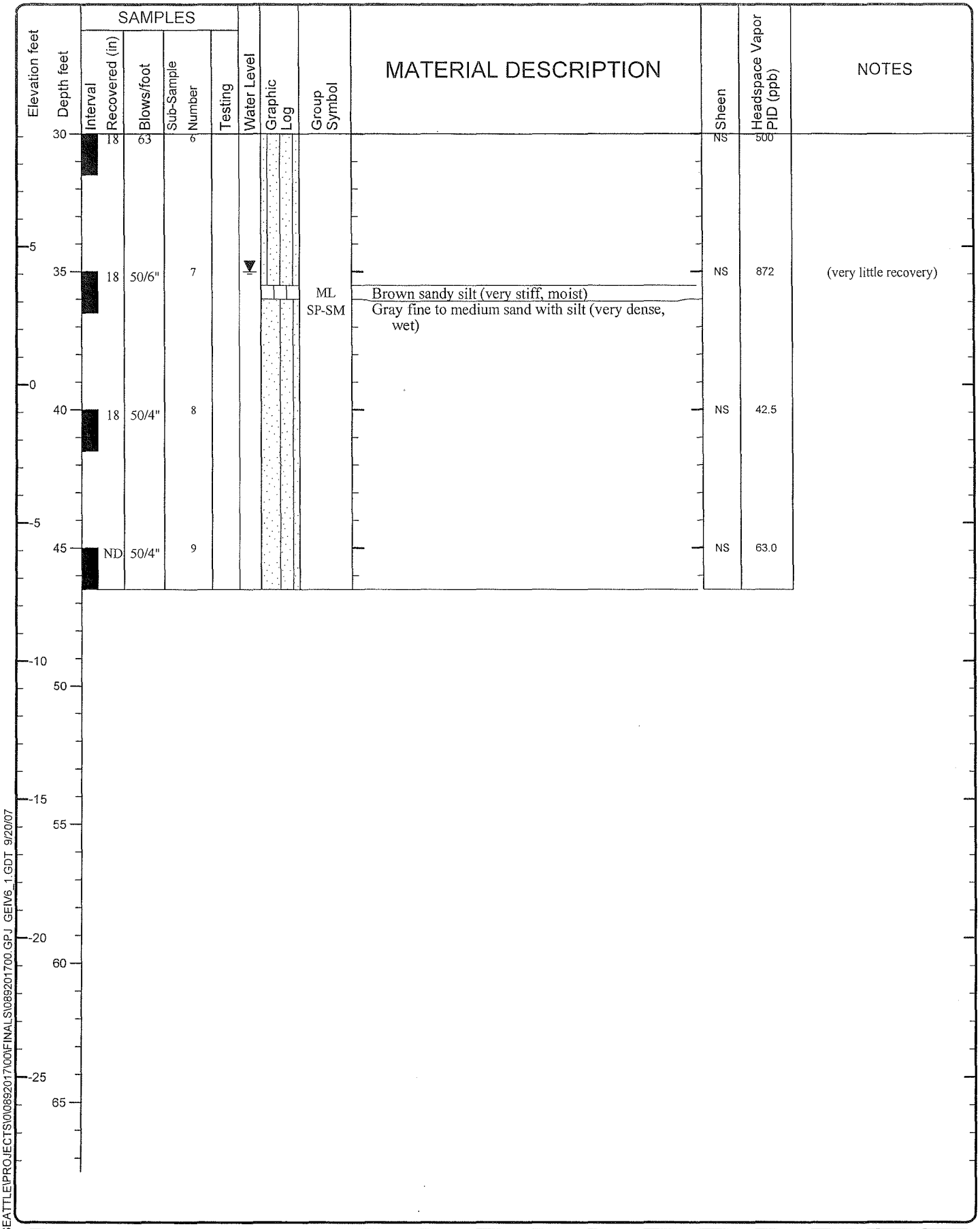
LOG OF MONITORING WELL MW-3

GeoEngineers

Project: McConkey/Sesko
Project Location: Bremerton, Washington
Project Number: 0892-017-00

Figure A-4
Sheet 1 of 2



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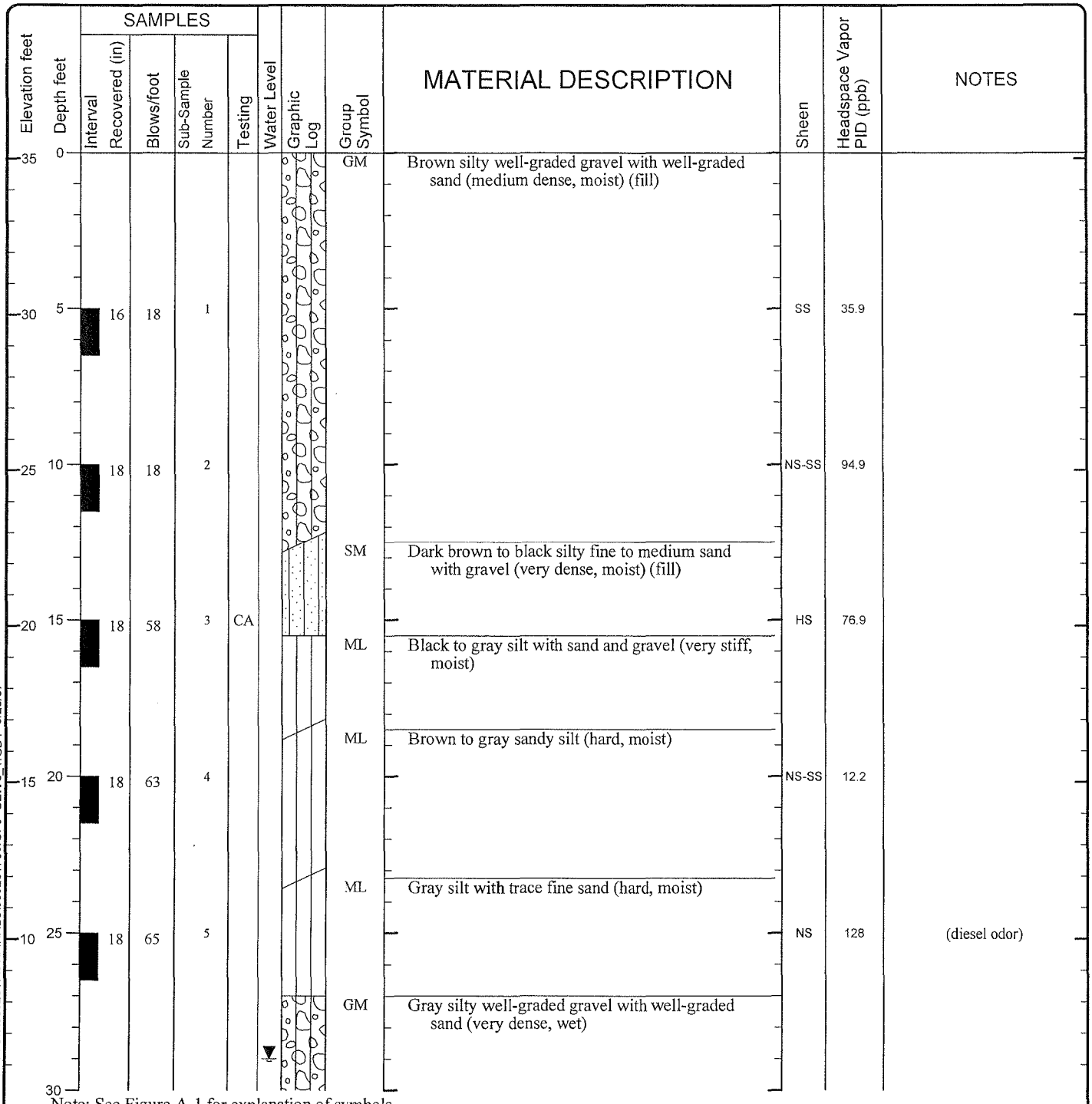
LOG OF MONITORING WELL MW-3 (continued)

GeoEngineers

Project: McConkey/Sesko
Project Location: Bremerton, Washington
Project Number: 0892-017-00

Figure A-4
Sheet 2 of 2

Date(s) Drilled	05/23/07	Logged By	MSL	Checked By	MSL
Drilling Contractor	Cascade Drilling	Drilling Method	HSA	Sampling Methods	Dames & Moore
Auger Data	4¼-inch ID	Hammer Data	300 lb hammer/30 in drop	Drilling Equipment	CME 75
Total Depth (ft)	41.5	Surface Elevation (ft)	35.20	Groundwater Elevation (ft)	6.2
Vertical Datum		Datum/ System	NAVD88	Easting(x): Northing(y):	



Note: See Figure A-1 for explanation of symbols.

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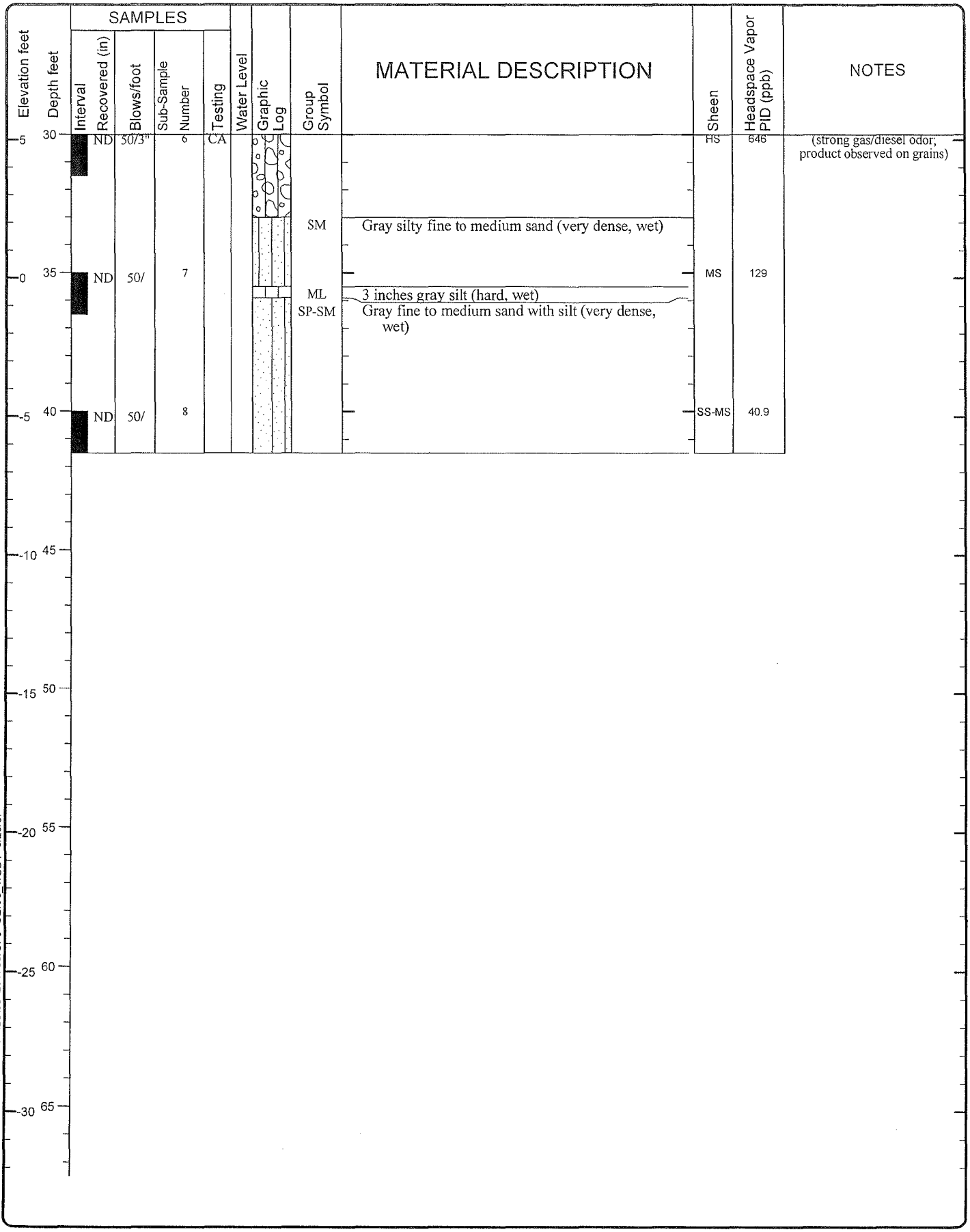
LOG OF MONITORING WELL MW-4

GeoEngineers

Project: McConkey/Sesko
Project Location: Bremerton, Washington
Project Number: 0892-017-00

Figure A-5
Sheet 1 of 2



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LOG OF MONITORING WELL MW-4 (continued)

GeoEngineers

Project: McConkey/Sesko
Project Location: Bremerton, Washington
Project Number: 0892-017-00

Figure A-5
Sheet 2 of 2

Date(s) Drilled	05/24/07	Logged By	MSL	Checked By	MSL
Drilling Contractor	Cascade Drilling	Drilling Method	HSA	Sampling Methods	Dames & Moore
Auger Data	4¼-inch ID	Hammer Data	300 lb hammer/30 in drop	Drilling Equipment	CME 75
Total Depth (ft)	21.5	Surface Elevation (ft)	18.51	Groundwater Elevation (ft)	Not Encountered
Vertical Datum		Datum/ System	NAVD88	Easting(x): Northing(y):	

Elevation feet	Depth feet	SAMPLES: Interval	Recovered (in)	Blows/foot	Sub-Sample Number	Testing	Water Level	Graphic Log	Group Symbol	MATERIAL DESCRIPTION	Sheen	Headspace Vapor PID (ppb)	NOTES
	0								OL	Organic silt with sand and roots (loose, moist) (topsoil)			
									ML	Brown to dark brown sandy silt with occasional gravel (stiff, moist) (fill)			
15													
5	5	1	18	14	1						SS-NS	1,426	(bricks, roots)
									SM	Brown to black silty fine to coarse sand with gravel (medium dense, moist) (fill)			
10	10	2	18	22	2	CA					NS-SS		(2 inch layer of fill with charcoal pieces)
									GM	Gray to black concrete pieces and fine to coarse gravel with coarse sand and silt (very dense, moist) (fill)			
5									SP	Brown fine to medium sand with trace silt (very dense, wet)			
15	15	3	18	50	3						NS		
0									SP	Gray fine to medium sand with trace silt (very dense, wet)			
20	20	4	18	50/3"	4	CA					NS		(faint diesel odor)
-5													
25													
-10													
	30												

Note: See Figure A-1 for explanation of symbols.

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LOG OF MONITORING WELL MW-5

GeoEngineers

Project: McConkey/Sesko
Project Location: Bremerton, Washington
Project Number: 0892-017-00

Figure A-6
Sheet 1 of 1

Date(s) Drilled	05/22/07	Logged By	MSL	Checked By	MSL
Drilling Contractor	Cascade Drilling	Drilling Method	HSA	Sampling Methods	Dames & Moore
Auger Data	4¼-inch ID	Hammer Data	300 lb hammer/30 in drop	Drilling Equipment	CME 75
Total Depth (ft)	36.5	Surface Elevation (ft)	34.95	Groundwater Elevation (ft)	7.95
Vertical Datum		Datum/ System	NAVD88	Easting(x): Northing(y):	

Elevation feet	Depth feet	SAMPLES: Interval	Recovered (in)	Blows/foot	Sub-Sample Number	Testing	Water Level	Graphic Log	Group Symbol	MATERIAL DESCRIPTION	Sheen	Headspace Vapor PID (ppb)	NOTES
	0								AC	Concrete			
									CR	Crushed rock mixed with treated wood			
									SM	Brown silty fine to medium sand (dense, moist)			Creosote-like odor and black tar-like substance
30	5		18	32	1	CA			ML	Brown sandy silt (very stiff, moist)	NS	>2,000	
25	10		18	50	2	CA			SM	Dark brown to black silty fine to medium sand (very dense, moist)	SS-MS	186	Black staining
20	15		18	50	3				SM	Brown silty fine to medium sand (very dense, moist)	SS-MS	151	Sheen with dark black creosote-like staining
15	20		18	50	4				ML	Brown to gray interbedded sandy silt with trace gravel (very stiff, moist)	NS-SS	28.0	
10	25		14	50/4"	5		▼		GM	Light brown fine to coarse gravel with silt and sand (very dense, moist)	NS-SS	108	(diesel odor)
									ML	Brown sandy silt with gravel (hard, moist)			
5	30								SM	Gray fine to medium silty sand (very dense, wet)			

Note: See Figure A-1 for explanation of symbols.

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LOG OF MONITORING WELL MW-6

GeoEngineers

Project: McConkey/Sesko
Project Location: Bremerton, Washington
Project Number: 0892-017-00

Figure A-7
Sheet 1 of 2

Elevation feet	Depth feet	SAMPLES: Interval	Recovered (in)	Blows/foot	Sub-Sample Number	Testing	Water Level	Graphic Log	Group Symbol	MATERIAL DESCRIPTION	Sheen	Headspace Vapor PID (ppb)	NOTES
30			16	76	6						NS-SS	55	(strong gas/diesel odor observed on product grains)
0	35		14	50/4"	7	CA			GM	Gray fine to coarse gravel with sand and silt (very dense, wet)	NS-SS	104.0	
-5	40												
-10	45												
-15	50												
-20	55												
-25	60												
-30	65												

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LOG OF MONITORING WELL MW-6 (continued)

GeoEngineers

Project: McConkey/Sesko
Project Location: Bremerton, Washington
Project Number: 0892-017-00

Figure A-7
Sheet 2 of 2

Date(s) Drilled	05/23/07	Logged By	MSL	Checked By	MSL
Drilling Contractor	Cascade Drilling	Drilling Method	HSA	Sampling Methods	Dames & Moore
Auger Data	4¼-inch ID	Hammer Data	300 lb hammer/30 in drop	Drilling Equipment	CME 75
Total Depth (ft)	36.5	Surface Elevation (ft)	33.24	Groundwater Elevation (ft)	6.24
Vertical Datum		Datum/ System	NAVD88	Easting(x): Northing(y):	

Elevation feet	Depth feet	SAMPLES: Interval	Recovered (in)	Blows/foot	Sub-Sample Number	Testing	Water Level	Graphic Log	Group Symbol	MATERIAL DESCRIPTION	Sheen	Headspace Vapor PID (ppb)	NOTES
30	0								AS	Asphalt			
									GM	Dark brown silty fine gravel with sand (loose, moist) (fill)			
25	5		18	21	1	CA			ML	Brown sandy silt with occasional gravel (stiff, moist)	SS	183	(strong odor-coal pieces throughout)
									SM	Brown silty fine to medium sand with trace gravel (dense, moist)			
20	10		8	27	2				ML	Brown sandy silt with trace coarse gravel (very stiff, moist) (fill)	NS	15.7	
15	15		18	43	3				SM	Brown silty fine to medium sand with occasional fine gravel (very dense, moist)	SS	601	
10	20		18	63	4						SS	1,086	
5	25		18	48	5	CA	▼		SP-SM	Gray fine to medium sand with silt (very dense, moist)	HS	328	(very strong diesel odor)
									ML	Brown silt with fine sand (very stiff, moist)			
0	30								GM	Brown silty well-graded gravel with sand (very dense, wet)			

Note: See Figure A-1 for explanation of symbols.

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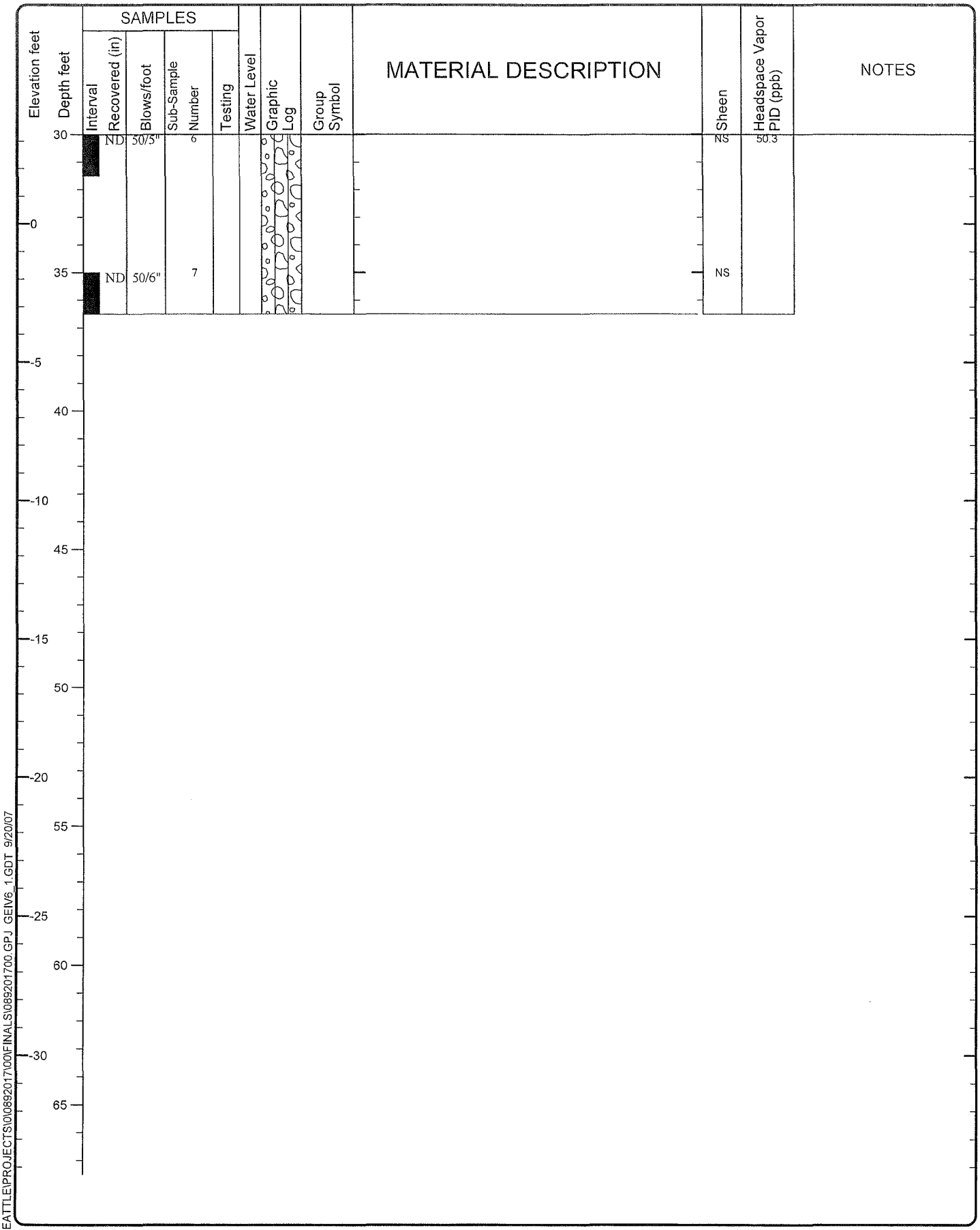
LOG OF MONITORING WELL MW-7

GeoEngineers

Project: McConkey/Sesko
Project Location: Bremerton, Washington
Project Number: 0892-017-00

Figure A-8
Sheet 1 of 2



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LOG OF MONITORING WELL MW-7 (continued)

GeoEngineers

Project: McConkey/Sesko
Project Location: Bremerton, Washington
Project Number: 0892-017-00

Figure A-8
Sheet 2 of 2

Date(s) Drilled	05/22/07	Logged By	MSL	Checked By	MSL
Drilling Contractor	Cascade Drilling	Drilling Method	HSA	Sampling Methods	Dames & Moore
Auger Data	4¼-inch ID	Hammer Data	300 lb hammer/30 in drop	Drilling Equipment	CME 75
Total Depth (ft)	41.5	Surface Elevation (ft)	35.56	Groundwater Elevation (ft)	6.56
Vertical Datum		Datum/ System	NAVD88	Easting(x): Northing(y):	

Elevation feet	Depth feet	SAMPLES: Interval	Recovered (in)	Blows/foot	Sub-Sample Number	Testing	Water Level	Graphic Log	Group Symbol	MATERIAL DESCRIPTION	Sheen	Headspace Vapor PID (ppb)	NOTES
35	0								OL	Organic top soil (loose, moist)			
									SM	Light brown silty fine to medium sand with gravel (medium dense, moist) (fill)			
30	5		18	11	1				SM	Dark brown silty fine to medium sand with gravel (medium dense, moist) (fill)	SS	4.0	
25	10		18	5	2	CA					SS	10.1	(pieces of charcoal)
20	15		18	16	3						SS	14.7	(pieces of charcoal)
									SM	Brown silty fine to medium sand with gravel (dense, moist) (fill)			
15	20		18	20	4						SS	17.6	
									SM	Brown silty well-graded sand with occasional gravel (very dense, moist)			
10	25		18	70	5	CA					SS	22.0	
									ML	Gray to brown mottled silt with fine sand (hard, moist)			
							▼		GM	Gray silty well-graded gravel with fine to coarse sand (very dense, wet)			
5	30										NS-SS		

Note: See Figure A-1 for explanation of symbols.

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LOG OF MONITORING WELL MW-8

GeoEngineers

Project: McConkey/Sesko
Project Location: Bremerton, Washington
Project Number: 0892-017-00

Figure A-9
Sheet 1 of 2

Depth feet	Elevation feet	SAMPLES: Interval	Recovered (in)	Blows/foot	Sub-Sample Number	Testing	Water Level	Graphic Log	Group Symbol	MATERIAL DESCRIPTION	Sheen	Headspace Vapor PID (ppb)	NOTES
30	-5		10	50/5"	6						(org)	40.0	(strong gas/diesel odor observed on product grains)
									SP-SM	Gray fine to medium sand with silt (very dense, wet)			
35	-0		6	50/4"	7						SS-MS	71.8	
40	-5		6	50/4"	8						SS-MS	105	
45	-10												
50	-15												
55	-20												
60	-25												
65	-30												

V6_ENVBORING W:\SEATTLE\PROJECTS\0089201700\FINALS\0089201700.GPJ GEIV6_1.GDT 9/20/07

LOG OF MONITORING WELL MW-8 (continued)

GeoEngineers

Project: McConkey/Sesko
Project Location: Bremerton, Washington
Project Number: 0892-017-00

Figure A-9
Sheet 2 of 2